



FRIDAY, APRIL 27.

Diagonal Rail Joints.

The engraving herewith represents a plan and side view of a rail joint which it is proposed to experiment with on an extensive scale on the Lehigh Valley Railroad. The peculiarity consists in cutting the ends of the rails diagonally at an angle of 60 degrees to the axis of the rail. In 1856, Mr. Robert H. Sayre, the former Superintendent and Engineer of the Lehigh Valley Railroad, tested 15 or 20 rails cut in this way, and laid on the old fashioned chairs. The results were so favorable as to lead to the adoption of this kind of joint, laid with fish-plates, on a more extensive scale. The rail-section to be used is that designed by Mr. Sayre, and was illustrated in the *Railroad Gazette* of Dec. 22 of last year. The results will be watched with interest by railroad men.

Contributions.

Locomotive Performance.

BOSTON, April 21, 1888.

TO THE EDITOR OF THE RAILROAD GAZETTE:

I was glad to see in a recent issue of your paper an article from a mechanical superintendent calling attention to the importance of an accurate knowledge of locomotive performance.

In making the statement that "there is no satisfaction in

A master mechanic to whom the writer made this suggestion said: "Yes, the allowance to shifting engines is much too large on fuel account, but not nearly large enough on repairs."

Granting this, is it not a greater reason for showing their work separately? If railroad managers could be impressed with the importance of looking after the expense of fuel for locomotives, forming as it does from ten to fifteen per cent. of the entire operating expenses of our railroads, and could thus be induced to provide means of investigation into its cost by keeping accurate accounts of the fuel used and of the work done, a saving would quickly be demonstrated in comparison to which the cost of such accounts would be the veriest trifle.

Yet the writer would venture the assertion that in hundreds of cases it is the dreaded cost of accounts which prevents that scientific and accurate knowledge of what is done on a railroad which is indispensable to the truest economy.

Cannot some of those who do not believe in accounts of locomotive performance be induced to come forward and state their reasons for the faith which is not in them, and to show what they propose as a substitute to promote economy in the use of fuel?

B. COAL.

Cast-Iron Car-Wheels.

TO THE EDITOR OF THE RAILROAD GAZETTE:

I wish to call your attention to an error in your calculations as to percentage of wheels failing annually as based on the number removed by a certain road during the month of February.

There is a much larger percentage of wheels removed from causes named during the months of February and March

larger carrying capacity of car, or at what weight of car will equal values be reached? Would it not be wise to give the 40,000 lbs. capacity car a fuller trial before increasing to 50,000 or even 60,000 lbs.?

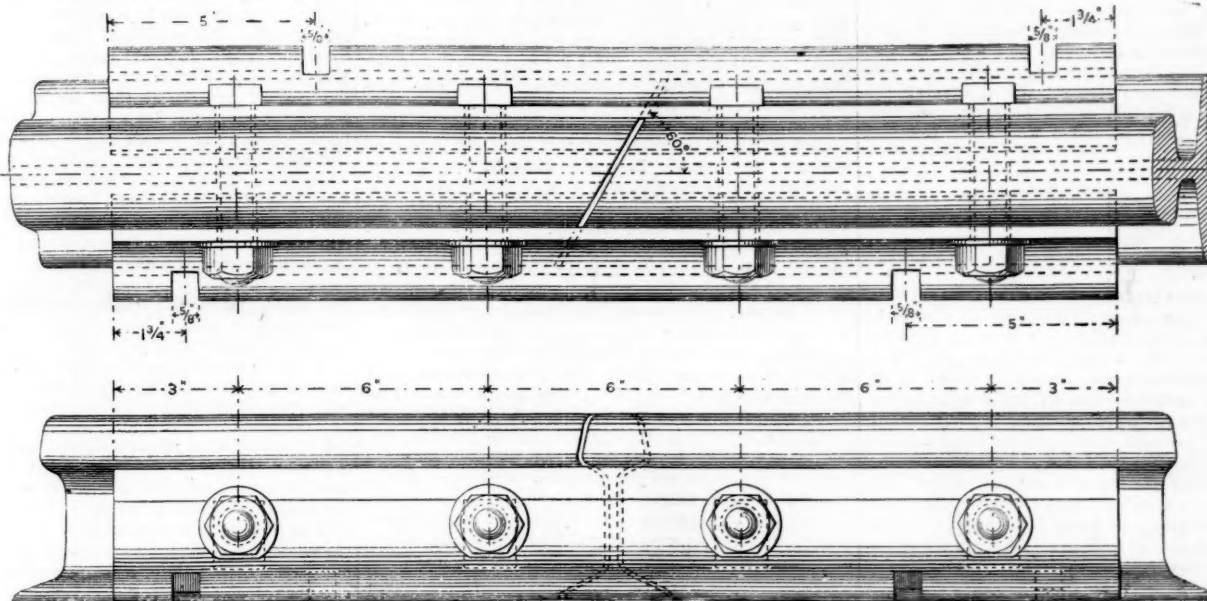
S.

TO THE EDITOR OF THE RAILROAD GAZETTE:

I beg to call your attention to certain points which should be considered before making what might otherwise appear to be the inevitable deductions from your article on car wheels in your issue of the 20th inst.

I was present at the meeting at Buffalo and understood from the statements made that the breakages reported were not exclusively those of wheels from cars belonging to the companies reporting, but from all cars passing over their roads during the period in question. I apprehend that these would amount to somewhat over 54,500 cars, and 436,000 wheels, and that the percentage of broken wheels would be reduced accordingly.

If my recollection is correct, the breakages were those of the month of March last, which was chosen as giving the most recent returns and as representing the severest period of the year. This was certainly the case with the report of the New York, Lake Erie & Western Railroad Company. The remaining wheels are from roads in the same latitude, no other being represented at the meeting, and if not for March, then for one of the recent winter months. Is it not too sweeping a generalization, even after making the correction already noted, to infer from these returns of two or three of the most northern roads, taken from the most trying period of the year, a rate of wheel mortality for the entire United States and for the entire year? Is it not unscientific to compare a rate so obtained with a rate obtained from a year's reports of the service in the far more moderate climate of Great Britain, even if—which is not probable—the latter cover all breakages?



DIAGONAL RAIL JOINT.

exhibiting a performance sheet that shows a fuel consumption and omits to give the reader any knowledge of the work done," he calls attention to a fact of the greatest importance, which is generally overlooked by those to whom it should be a matter of concern.

Our locomotive performance sheets are as a general rule of very little value, for several reasons. First and most important, there are scores of men in charge of railway transportation who do not believe in figures, and who consequently neglect to provide proper means for keeping account of the fuel used and the work done by the engines using it. Consequently they take no pains to bring plainly before each engineman the economy of his work as compared with that of his fellow-employees, and the engineman is quick to appreciate this fact, and has therefore no interest in taking pains to run economically.

Another source of error pointed out by your correspondent is the use of the miles run to the ton of coal as a measurement of the work done by engines, regardless of the weight hauled as best shown by the haulage of cars, loaded and empty. The chief objection to this standard of measurement, and the principal reason why it has so largely been adopted, may be found in the mileage allowance to shifting engines. The work of these engines is included in the same performance sheet as that of road engines, and as the mileage of shifting engines is purely an allowance of so many miles per hour, an allowance always too great, the general average of coal used per mile is reduced and great results are shown. The writer has known a performance sheet to show as high as 170 miles to the ton of coal made by a shifting engine with an allowance of only five miles per hour of service. A very few such items will raise the average work enormously, and yet it would be exceedingly difficult, if not impossible, to induce any considerable number of railroads to make separate performance sheets for shifting engines and road engines.

than any other time of the year. This is caused by the previous severe or solid condition of the road-bed, and the frost leaving the ground with inequalities of the track and other conditions existing at that season of the year.

TO THE EDITOR OF THE RAILROAD GAZETTE:

I have read with much interest the report of the discussion on the weight of car wheels by the master car-builders and wheel-makers, as reported in your journal of the 19th inst. The large percentage of broken wheels reported is evidence of either bad proportions, poor metal or too little of it. These are defects that a thorough investigation will detect, and may be remedied by the application of brains or iron, or possibly both. There is, however, a branch of the subject that seems to have been overlooked, i. e., the size of the wheels, or some other provision for the large car. The carrying capacity and weight of car have been increased until nearly double the weight is put upon the wheel that was required five years ago. So far as the strength of the wheel is concerned it certainly can be attained, if it has not been done, but how has the wear been provided for, or how is it to be? A 33-in. wheel with 10,000 lbs. upon it will certainly wear much faster than one of the same diameter bearing 5,000 pounds. The surface contact cannot be materially increased; there is thus but one way to meet the difficulty, if the use of cast-iron wheels is to be continued, and that is to increase the size of the wheel, so that fewer revolutions per mile will be required. But as an increase of 3 in. in diameter would decrease the number of revolutions only 49 per mile, or about 7.6 per cent., it would seem that some other plan must be resorted to, as the size cannot be increased commensurate with the duty required. I have seen no statistics as to the shortened life of a wheel under the heavier car, but such must inevitably be the result. Then will arise the question, what proportion does the increased outlay for wheels bear to the increased value due to

The force of your percentages is, to be sure, mitigated somewhat by your concluding remarks, but they none the less should be re-examined in the light of the consideration I have stated.

Since writing the above, I learn that the total number of wheels removed in 1882 on the Pennsylvania Railroad, for fractures of all kinds, was 2,577, or an average of 215 per month. The highest monthly number was 238. The number of cars owned by this company is 27,179, or one-half that represented in the returns which give 6½ times as many wheels broken in one month. On the Pennsylvania Railroad, however (and probably, as stated above, on the others), all cars on the road are included.

These figures, giving only 1½ per cent. on the wheels owned by the Company as the yearly breakage on a Northern road of very steep grades, show that an average for the United States is probably far below that you have figured. In estimating a normal mortality, there should also be considered, the form, weight and quality of metal. The first of these a far more important factor in a cast wheel than in any other. It may also be noted, that during the past two or three years, thousands of 20-ton cars have been put in use, under which wheels have been used of a weight whose sufficiency could not be determined—or has not been—except by experience.

J. S. WHITNEY.

[While it is probably true that a larger proportion of wheels fail at the time of year covered by the reports made at the Buffalo meeting, and therefore that our calculation for the whole year is not strictly correct—nor did it pretend to be—yet the figures indicate a condition of things which, as we said, certainly ought to be the cause of a good deal of solicitude.

The breakages reported were of all wheels passing over the road; but foreign cars do not, on the average, pass over these roads more than their cars pass over

foreign roads, or but little more, as we know by the fact that they receive about as much as they pay for car mileage. If there was not more than the usual disproportion in the month reported, these two roads had what was equivalent to the use of about 54,500 cars that month, part of them the cars of other roads received in exchange for their own cars.

We repeat that the conclusions reached do not pretend to accuracy, but they do indicate a condition of things which is worthy of serious attention. We have taken measures to ascertain the exact facts in relation to the wheels and tires which failed and are reported by the British Board of Trade, and as soon as we obtain the information it will be published in these columns.—EDITOR RAILROAD GAZETTE.]

Instructions to Section Foremen.

BY ONE OF THEM.

I.

INTRODUCTORY.

I have been induced to begin this writing, thinking it may be the means of giving some light to some who perhaps have not worked so long on railroads as I have; and for some of the information it contains I would willingly myself have paid in money rather than get it by experience. The number of men employed at present is so large and the increase of mileage so great on railroads, necessitating the services of so many men as trackmen, it is not reasonable to suppose that all who are employed in charge of section work are competent for the work expected of them. It is for those who have not had the chance for experience in section work that this writing is intended. And perhaps for those who have been long in the employ of roadmasters on track repairs, a reading will not do any harm. A man is often given a section for his good working qualities, sobriety, etc., and may know how to do any kind of work on a section under the direction of another, but placed in charge he is different. Such a man will find in the following some hints and suggestions that may help him. And men who are competent trackmen, and men who think they know everything worth knowing, also may derive some benefit from a perusal of what I have to say on the following subjects:

Bolting track,	Lining track,
Gauging track,	Ditches,
Expansion,	Bridges,
Spiking,	Switches,
Tools,	Cutting grass,
Hand cars,	Wrecks,
Lifting track,	Turn-tables.

TAKING CHARGE OF SECTION.

When you are given charge of a section you will not be out of place in asking the roadmaster if there is anything particular he wants done where he is sending you. If so, remember distinctly what he says when you go there. Take your car and run over your section; note everything possible in passing along. When you come to bridges or culverts, get off the car and make a careful inspection of stringers, bents or piles, braces, spiking, approach to bridge, etc., until you go the entire length of it, and then you must arrive at a conclusion as to what is most necessary or needs repairing most, and give your orders to your men in plain, gentlemanly language. If you have taken the place of a foreman who may have been discharged, pass no remarks on his work as he left it. Don't look wise and try to make men believe you know more than you do. Sometimes you will have men working for you who know just as much as you do, and perhaps more; and the most intelligent man in a section gang is not always the foreman. In doing track work sometimes a man will suggest doing it differently. In most cases I would let him do it, and if I saw it was better than my own I would adopt it. Never think you know everything. I do not advocate discussing questions with men, but I have learned a good deal from men under me; and, again, sometimes it is only by an interchange of ideas we arrive at a correct solution.

BOLTING TRACK.

If bolts should be loose, tighten them as soon as possible. If they are allowed to remain loose, the thread gets worn on the bolt where it passes through the plates, and soon becomes useless, on account of the play when trains are passing. To keep your track up and in surface, you must keep the bolts tight, and in nearly every case where you find a low joint you will find the bolts loose. Lift the joint first, then tighten the bolts if you are surfacing track, as you may tighten them when the joint is low, and if you afterward lift it you will find it loose again. On track that is ballasted and in good surface, if bolts are tightened in spring and it is properly done they will not need any more until the summer is over, more especially with some of the improved fastenings. It is well to make a thorough job of tightening bolts. Give two men each a wrench or spanner and let them commence at one end and try every bolt as they go. Then you know they are all secure. Each man ought to carry a hammer and when he tightens the bolt or nut strike the head of the bolt a tap with the hammer, when the nut can generally be given another turn. In this way you make a good job of it. Two men will tighten two miles per day. Will some trackman try to invent a fastener or nut-lock for track-bolts that will keep them tight? If he would he would find a good remuneration for the time thus spent. What is wanted is to make the bolts and nuts adjust themselves to each other so as to produce a good fit, even if differing in original size. Your work every day brings you in contact with this work, and you could easily experiment with them.

GAUGE OF TRACK.

This is important and needs attention, particularly if on newly laid road-bed, as with the hurry in tracklaying at present, each one trying to outdo the other, it is impossible to pay particular attention to details, and if newly laid you will on most roads find a good deal of repairs necessary in gauge of track. If you notice the rails on the inside worn or ground with the wheels of cars, the gauge is either too tight or the track is out of surface. Every precaution should be used to make the wear of track, or rails rather, even and uniform. This can only be done by gauge and surface, two important factors, which must necessarily affect rolling stock in a like proportion, and I would think to a greater extent. Curves laid with straight rails will straighten more or less through time, and curves, especially sharp curves, need looking after often to see if the gauge is right; and in doing this be sure to keep your gauge at right angles across the track. With the improved half-circle on one end of the gauge this is easily done. Where track is out of surface, you want to be particular and look after it, and in repairs of frogs be particular, if you notice the point of frog wearing on main line, to repair it at once. Do not make the passage too easy through it, but make it just right. Notice the turn-out side of frog; if wearing, the gauge of that also needs repairs; or if not, then the guard rail does. Whenever you see anything unusual, such as I have mentioned, you see the effect is something wrong, and to know your business as a trackman you must find out the cause. It is from those two things, cause and effect, we arrive at remedies.

The time of year that will suit you best to make repairs on this work is in winter; then when spring comes and track may be bad, you will not have to take part of the men to do this, but can keep all hands at lifting, because track lifted and lined out of gauge must be gauged to make your work appear or be finished.

EXPANSION.

If you notice in going over the section in cool weather, say spring or fall, or even in the morning in summer, a very tight joint, and the average length of rails is 30 ft., you will do well to mark this place in your memory, if you do not attend to repairing it at once, for if hot days should come the track might be thrown out of line, as is often the case. You must cut the rail; it is the only remedy for it. Loosen the bolts on some of the other joints each side, and take up enough expansion by inserting the chisel at the joint and spreading them apart. In case you should find it out of line and a train nearly due, send a man each way with a signal flag to "stop" until repaired, then take the rest of the men, go back 150 ft., and throw the track with an easy curve until you come to the kink of the rails; then go 150 ft. in the other direction and throw the track the reverse way until you come to the kink. This will do for the present. Put your flag from "stop" to "slow," and it is safe for any train; but you must cut the rails to make a permanent job of it—the foregoing is merely a shift for the time being, so as not to delay trains. Remember a track that might not be thrown out of line by excessive heat if no train passed over it would, if very tight, be likely to do so if a train did pass over it at the hottest part of the day, say from noon until 3 p. m., and during this time should a train pass over the section and you have some very tight joints, it would be well to follow and see if everything is all right. I have seen a train pass over tight joints and seen the track thrown out of line, moving ties well filled with ballast, rendering it unsafe for trains to pass. It is my opinion that if no train had passed over it during this heat no accident would have occurred, and for this reason I have said it would be well to follow a train in this case. It is really necessary to look after expansion, and among other things it must be rectified the first opportunity. Just as long as track is hurried through, even in some cases by the advice of engineers, to get an engine over it in any way almost, so that extra progress can be reported, such things will need looking after. Of course they expect men will be put on repairs, and they will say they will attend to it. Something must be left them to do or else they will be idle. But I have worked on roads where the orders were to leave nothing for the section men to do. I mean construction left nothing for permanent way to do, only repairs. I know it was good policy from observation, both in wear of track and rolling stock, and what was a greater saving than all, in accidents.

SPIKING.

To give spikes their greatest strength in holding the rail firmly in position they should be driven straight, and the spike should also touch the rail, and when driven nearly down then a light tap of the hammer given. Some section men have a practice of driving the spike to say within two inches of the head, and then giving it a slanting blow to bring it close to the rail and appear a good fit. When driven in this way the shank of the spike if not broken is cracked and will eventually break, and it is in the wood where you can't see it. Other men have a practice of tightening the spike when lifting track to hold the ties tight to the rail while tamping them and hit them so hard they either bend the head where they come on the rail or else leave them cracked at the neck. Do not allow this. If you notice men doing this take a claw-bar and show them the result. In nearly every case you will pull the head off the spike with the claw-bar. Notice when making repairs of spiking, if on the opposite side of track, the outside spike is driven ahead of the inside spike or vice versa. Drive them the same on the side you are making repairs. This serves to hold the ties from sliding forward or back in the rails as they are sure to do unless they are well filled in with ballast. Particular attention should be given to this on bridge work. In driving spikes in slots of rails I prefer them driven with lip of spike next to rail, contrary

to the general custom, for two reasons. One is the blow of your hammer strikes the spike in a line with the shank and will not break the head off; the other, in drawing spikes for repairs the claw bar catches the spike when drawing instead of the head were it driven otherwise. Should you notice your track spreading on curves, that curve has not got elevation enough. A practice often followed by track men is to take fish-plates, put one end against the rail and spike the other to the tie, and in doing this some bend the fish-plate, making it unfit for use afterward. Do not let any one see you using fish-plates for this purpose. It is slovenly, it is careless, it looks bad—I'll tell you why: In the first place, fish-plates are costly; and in the next place, if you have a surplus of them, they should be piled up neatly at the car-house for the use they were made for. Get a plank—if there is no plank, any kind of wood will answer by making it the required length and shape with an axe—cut it one foot in length, place one end under the ball of the rail, and put one spike at the end of it in the tie. This will have a deal more strength in holding the rail in position than double spiking, and fifty such fastenings would not cost as much as one fish-plate. I have often thought men should be made to pay for a wasteful use of railroad property, just because it comes handy to do so. If I were your roadmaster and found you using fish-plates for this purpose, I would send you to a warmer climate than Dakota for a short time. But remember, I told you before, if you saw spikes drew or pressed out on curves, making it secure by spiking in winter will do, but if in summer, give the rail more elevation, which will generally produce the desired result. I find in the *Railroad Gazette* that a large percentage of accidents coming under the head of "derailments" is the result of spreading of track. Therefore, attention to spiking is a necessity at all seasons of the year; and when spiking know how to do it right without waste of either time or material.

TOOLS.

When your day's work is done, don't leave your tools you are using with the intention of coming back there the next work you do. You don't know on section work where or at what place you may be needed an hour from then or the next morning. Put everything on the car and take the tools to the tool house. If you have no tool house, get three or four old ties, lay them on one another where you take the car off and stand them against these ties. That is a place for them; at least when anything is wanted you know where it is. Don't throw anything behind you, perhaps in the grass or where it will get covered by the first snow-storm. If you have a car house, sweep it out on rainy days, change the tools around, give the place an air of care and tidiness. Repair pick handles, grind chisels and axes on wet days. Don't have the men sitting in the house playing cards, or some other useless pastime, when they expect pay for their time. Find something for them to do, and this can be done often in repairing hand car or tools. Keep your chisels in good order; if made with an eye, have handles on them. Keep your lamps in the tool house; have oil in them; have an eye to everything in general in the shape of tools, etc., furnished you by the company. The road-master will notice it and give you credit for it.

HAND CARS.

I have seen hand cars that by my valuation were worth just as much as some foremen. But I have never seen a hand car used as carefully as some foremen use themselves. A hand car is something that gives a foreman a great chance to show what an important employé he is. For instance, in the morning in going out to work he squats himself down and gives orders to the men to go ahead. It may be they carry on the car a water vessel of some kind. If so he likely sits on that. It's laborious work, but he does it. They come to rising grade; she requires to go slower and slower; sometimes you think she is going to stop. After some orders from the foreman she starts ahead again, never much faster than four miles per hour; but she don't come home to dinner at this speed, nor at six o'clock either, but I have known it to take one hour to go to work with a hand car three miles, and I have known the same car to return the same distance at noon in fifteen minutes. One would naturally suppose there must be a great difference in hand cars and in which way they are traveling. Well, there is a great difference. When bolts come loose some foremen tighten them; when they want oiling they are oiled and care of them is taken; but it is different with others. When they are taken off the track they are used as if they wouldn't break; they are oftener injured by lifting them off the track one end at a time. The wheels on the ground in turning get caught against the ties and the axle gets bent. This is usually the case when there are three men and a foreman, as it is beneath the dignity of some foremen to lift off the car. Should there only be two men then it is the only way; but a simple appliance can be made to be carried on the car, called a "jigger," which, if used when you have only two men, will save it from injury. Two pieces long enough for the car to stand on and one piece across the track to support them; cross piece to have a support in centre, so that when pieces are laid on cross piece it will tip up enough to let the car and all turn around over the rail. No fastening is needed, and the three pieces are separate and can be put on the car when not in use. The key in the axle will generally get loose with usage. This will make the large wheel revolve with a snap. Tighten this key; don't let it wear loose; if you do you will have to send it to the shop for repairs, which you may avoid by a little care on your own part. Some men are old soldiers at pumping a hand car. Never sit down for men to pump you over the section; be at the handle yourself. When you meet one of these time-killers at pumping stop the car and give him to understand in language that he will understand without the use of Webster's definitions what you expect of him. You need not do this more than once.

Improved Grading Implements.

The Western Wheel Scraper Company, of Mt. Pleasant, Iowa, has recently perfected several improvements in the wheeled scrapers it is manufacturing, which it believes to be of great benefit to those interested in grading.

The accompanying illustrations show the automatic end gate and raising attachment, and will enable the reader to form an opinion as to their utility.

The automatic end gate is for the purpose of retaining all the earth that can be loaded into the scraper-box, and consists of a steel or iron plate, the depth and width of the scraper-box, attached by crank rods to castings fastened to the tongue's braces, and raised and lowered by means of the hinged connections to the crank axle. The raising of the lever to load the scraper—as shown in fig. 1—raises the end gate up, under and behind the front hook, out of the way of the dirt; and the downward movement of the lever made in raising the box and hooking the lever behind, as shown in fig. 2, forces the end gate down and against the dirt in the box, holding all that has been loaded into it; none of the dirt in the box being cut away on account of the end gate descending in a nearly vertical position. The dumping of the scraper forces the end gate up and releases the dirt (see fig. 3). It will be valuable for use in dry sand and gravel, or any dirt too dry to pack in the scraper. It can be applied to scrapers now in use, as it only requires a few minutes to put on or take off.

The raising attachment is for the largest sized scrapers only. A lifting wheel with steel pin cogs is attached to the hubs of the wheels; a curved rack, pivoted to the box, is thrown into gear by a crank rod passing to the rear and around the back end of the box, as shown in fig. 3. The forward motion of the wheel, when the curved rack is thrown into gear, raises the box high enough for the back hook on the lever to catch when the rack is thrown out of gear, the scraper being raised within a distance of five feet.

The same company has improved the leverage for raising the scraper by hand, increasing the power of the lever nearly one-half, so that one man can raise the largest sized scraper, where formerly it took two, and this without increasing expense, weight, or adding any additional machinery.

An invention for excluding the dirt from the spindles has also been perfected. We present also a cut of an improved plow made by the same company. Particular attention is directed to the standards, cutters, steel-faced shoe and guard. The largest size, the manufacturers claim, will stand the strain of from 12 to 13 horses.

These implements are made by the Western Wheel Scraper Company, at Mt. Pleasant, Iowa.

The Proper Weight for Cast Iron Car Wheels.

The sub-committee, consisting of Messrs. F. M. Wilder, L. Garey, R. C. Blackall, Robert Metter and J. S. Lentz, appointed at the recent general meeting of Master Car-Builders to confer with wheel makers, met at the Tefft House, Buffalo, April 11. Mr. F. M. Wilder acted as Chairman, and D. M. Brady as Secretary. The following wheel-manufacturers were represented:

Ramapo Wheel & Foundry Co.
Rochester Wheel Co.
Cayuta Wheel Co.
Thacher, Lathrop & Co.
Griffin Car-Wheel Co.
Lehigh Car-Wheel Co.
A. Whitney & Sons.
Barnum Richardson Co.
Allen Paper Car-Wheel Co.
Washburn Steel Wheel Co.
Andrews & Clooney.
Davenport, Fairbairn & Co.

It was moved and carried:
"That the torsional testing machine, invented by Prof. R. P. Thurston, or any other equally accurate machine, for giving the tensile, torsional and transverse strain to materials be adopted as a standard machine for making tests."

The following was also adopted:
"That railroad companies be requested to adopt a standard test showing a quality of materials used in the manufacture of wheels."

After some further discussion, Mr. Lentz moved that when the Committee adjourn it adjourn to meet at Buffalo at 7 o'clock p. m., on May 16, next.

Mr. Garey then moved that all car-wheel makers be requested to send to the adjourned meeting a statement of their views in regard to what the standard of quality of materials for car-wheels shall consist of, and how the test to ascertain the same shall be made.

This was accepted as a substitute for the two resolutions first adopted and carried.

It was also resolved that a copy of the above resolution be sent by the Secretary to all wheel-makers not present at this meeting.

Wheel-makers are requested to address communications to F. M. Wilder, N. Y., L. E. & W. Railway, Susquehanna, Pennsylvania.

Train Accidents in March.

The following accidents are included in our record for the month of March:

REAR COLLISIONS.

On the morning of the 1st a freight train on the Western & Atlantic road ran into some cars which had broken loose from a preceding freight near Cartersville, Ga. The engine and four cars were damaged. The fireman and a brakeman were hurt.

On the morning of the 1st a passenger train on the International & Great Northern road ran into the rear of a freight train at Wells, Tex., wrecking several cars.

On the morning of the 4th a freight train on the New York, Lake Erie & Western road broke in two near Shin Hollow, N. Y., and the rear section ran into the forward one, wrecking several cars.

On the evening of the 4th a passenger train on the Lake Shore & Michigan Southern road ran into the rear of a freight near Millbury, O., wrecking the caboose and injuring two brakemen.

On the evening of the 5th a freight train on the Intercolonial road ran into some cars which had broken loose



Fig. 1.

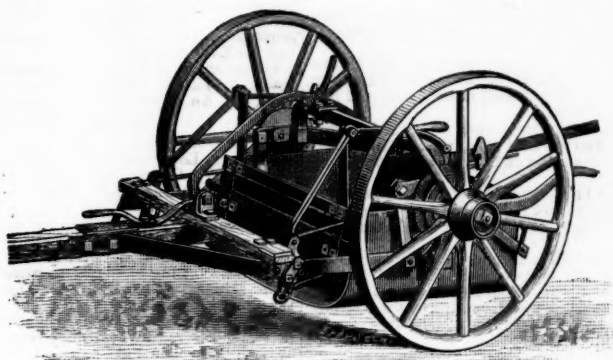


Fig. 2.



Fig. 3.



Fig. 4.

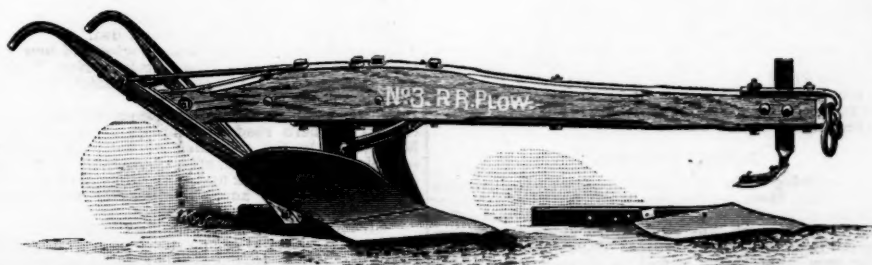


Fig. 5.

WHEEL SCRAPERS AND GRADING PLOWS.

Made by the WESTERN WHEEL SCRAPER CO., Mt. Pleasant, Iowa.

from a preceding freight near Memramcook, N. B., wrecking several cars and damaging the engine.

On the afternoon of the 5th a freight train on the New York Central & Hudson River road ran into a preceding freight near Rochester, N. Y., damaging several cars.

Very early on the morning of the 6th a freight train on the Baltimore & Ohio road ran into a preceding freight near Hunts, O., and the engine and three cars were wrecked.

On the evening of the 6th a freight train on the Cleveland & Pittsburgh road ran into a preceding freight near East Liverpool, O., wrecking several cars.

On the night of the 7th a freight-train on the New York Central & Hudson River road ran into the rear of a preceding freight near Syracuse, N. Y., damaging the caboose.

On the morning of the 8th a freight train on the Cleveland, Akron & Columbus road ran into a switching freight train at Old Forge, O., wrecking several cars.

On the morning of the 9th a freight train on the Shenandoah Valley road broke in two near Buchanan, Va., and the rear section ran into the forward one, wrecking four cars.

On the afternoon of the 9th a freight train on the New York Central & Hudson River road ran into the rear of a preceding train near Jordan, N. Y., wrecking several cars.

On the evening of the 9th a freight train on the Ohio & Mississippi road ran into a flat car which had been run out of a siding near Richland, Md., in some unknown way. The engine and a car were damaged and the engineer hurt.

On the morning of the 10th a freight train on the New York, Susquehanna & Western road ran into another freight which was just backing into a siding at Franklin Furnace, N. J. Both engines were slightly damaged.

On the afternoon of the 10th a freight train on the Eastern road broke in two near Eliot, Me., and the rear section ran into the forward one, wrecking four cars.

On the evening of the 10th a freight train on the Minneapolis & St. Louis road broke in three parts near Excelsior, Minn., and the second section ran back down grade and into the third, damaging several cars.

On the morning of the 11th a passenger train on the South Carolina Railroad ran into the rear of a repair train near Rowesville, S. C., and the engine and three cars were damaged.

On the morning of the 11th a snow-plow on the Canadian Pacific road ran into the rear of a freight train near Hull, Ont., damaging several cars and injuring three trainmen slightly.

On the afternoon of the 13th a freight train on the Utica & Black River road broke in two near Holland Patent, N. Y. When the break was discovered the first section backed up after the missing cars and, coming on them sooner than was expected, struck with great force, wrecking several cars.

On the night of the 13th a freight train on the New York Central & Hudson River road ran into a switching freight train in Rochester, N. Y., wrecking several cars.

On the afternoon of the 14th a freight train on the Delaware, Lackawanna & Western road ran into some cars which had broken loose from a preceding freight at West End, N. J., doing a little damage.

On the evening of the 14th a freight train on the Chicago & Northwestern road ran over a misplaced switch and into a passenger train on a siding in Kenosha, Wis., damaging one car.

On the morning of the 15th a freight train on the Buffalo, York & New Philadelphia road ran into a preceding freight near Jamison, N. Y. The engine and several cars were wrecked.

On the afternoon of the 15th a freight train on the New York, Pennsylvania & Ohio road ran into a preceding freight near Evansburg, Pa., damaging several cars.

On the night of the 15th a freight train on the New York, Lake Erie & Western road ran into some cars which had been left projecting over from a siding at Dayton, N. Y. The engine and two cars were damaged, the conductor and a brakeman hurt.

On the morning of the 16th a passenger train on the East Tennessee, Virginia & Georgia road ran into the rear of a freight train near Limestone, Tenn. The engine and several cars were wrecked, the engineer killed and two other trainmen hurt. It is said that a brakeman was sent back with a flag, but fell asleep while waiting.

On the evening of the 19th a freight train on the Lake Shore & Michigan Southern road ran over a misplaced switch and into another freight standing on a siding near Erie, Pa. Several cars and an engine were badly damaged. The engineer was fatally injured.

On the morning of the 20th a freight train on the New York Central & Hudson River road ran into a preceding freight near Schenectady, N. Y., damaging an engine and several cars.

On the morning of the 20th a snow-plow on the South-eastern Railway, of Canada, ran into the rear of a passenger train near Richford, Vt., damaging a car and injuring five passengers.

On the afternoon of the 22d a freight train on the Grand Trunk road ran into a preceding freight near Port Hope, Ont., wrecking several cars. The wreck caught fire and two cars were destroyed.

On the morning of the 25th a freight train on the Missouri, Kansas & Texas road ran into a preceding freight near Denison, Texas, wrecking several cars. A tramp stealing a ride was killed and another hurt.

On the evening of the 26th a coal train on the New York, Lake Erie & Western road broke in two near Mongaup, N. Y., and the rear section ran into the forward one, wrecking five cars.

On the afternoon of the 27th a freight train on the New York Central & Hudson River road ran into a preceding freight train near Syracuse, N. Y., damaging two cars.

On the afternoon of the 29th a freight train on the Missouri Pacific road broke in two near Sedalia, Mo., and a following freight ran into the detached section. The engine and several cars were damaged and the fireman hurt.

On the night of the 30th a freight train on the Terre Haute & Indianapolis road ran into a preceding freight near Brazil, Ind., wrecking the engine and several cars. The fireman was killed and the engineer badly hurt.

On the evening of the 31st a coal train on the Lehigh Valley road ran into a preceding coal train at Catasauqua, Pa., wrecking a number of cars.

BUTTING COLLISION.

On the morning of the 1st there was a butting collision at South Holyoke, Mass., on the New Haven & Northampton road, between a switching engine and several cars and a regular freight, which was running in alone, the engine having cut loose for a flying switch. The switching engine and six cars were badly broken, a fireman killed and a brakeman hurt. The regular freight was on time and had the right to the track.

On the night of the 4th there was a butting collision between two freight trains on the Chicago & Grand Trunk road near Lapeer, Mich., by which both engines and several cars were badly broken.

On the night of the 5th there was a butting collision between two freight trains on the Southeastern Railway,

of Canada, near Richford, Vt. Both engines and several cars were damaged and four trainmen hurt.

On the evening of the 6th there was a butting collision between two freight trains on the Chicago & Alton road near Jerseyville, Ill., by which both engines and several cars were damaged and a trainman hurt.

On the evening of the 9th there was a butting collision between two freight trains on the Wabash, St. Louis & Pacific road near Wellsville, Mo. Both engines and several cars were badly broken.

On the evening of the 27th there was a butting collision between two coal trains on the Central Railroad of New Jersey, in Easton, Pa. Both engines and several cars were damaged.

Near midnight on the 27th there was a butting collision between two freight trains on the Central Railroad of New Jersey, at Rockport, Pa. Both engines and several cars were wrecked, and one engine thrown down a bank into the Lehigh River.

On the afternoon of the 28th there was a butting collision between two freight trains on a high trestle on the transfer track between the Nashville, Chattanooga & St. Louis and the Louisville & Nashville stations, in Nashville, Tenn. An engine and nine cars were wrecked and piled up on the trestle in very bad shape, and four trainmen were badly hurt.

CROSSING COLLISIONS.

On the morning of the 16th an Illinois Central freight train ran into a Chicago & Alton freight at the crossing in Normal, Ill. An engine and a number of cars were piled up in a bad wreck.

On the morning of the 16th a passenger train on the Eastern road ran into a Boston & Maine passenger at the crossing in Somerville, Mass. Both engines were slightly damaged. The signal was set for the Boston & Maine train, but the Eastern engineer did not stop.

On the night of the 17th a Little Miami freight train ran into a Marietta & Cincinnati freight at the crossing in Loveland, O. An engine and one car were badly broken.

DERAILMENTS, BROKEN RAIL.

On the morning of the 1st a passenger train on the New York, Lake Erie & Western road struck a broken rail near Cherry Creek, N. Y., and the rear car was thrown from the track and upset. Four passengers were slightly hurt.

On the afternoon of the 1st a passenger train on the Wabash, St. Louis & Pacific road struck a broken rail near Colburn, Ind., and one car was thrown from the track.

On the morning of the 2d a passenger train on the St. Paul, Minneapolis & Manitoba road was thrown from the track near Breckenridge, Minn., by a broken rail.

On the night of the 6th a freight train on the Milwaukee & Northern road was thrown from the track near Hayter, Wis., by a broken rail.

On the night of the 6th four cars of a freight train on the Lake Shore & Michigan Southern road were thrown from the track near Jefferson, O., by a broken rail.

On the evening of the 7th eight cars of a freight train on the Central Pacific road were thrown from the track near Truckee, Cal., by a broken rail.

On the morning of the 8th the engine of a local passenger train on the Pittsburgh, Fort Wayne & Chicago road was thrown from the track in the yard in Allegheny, Pa., by a broken rail.

On the morning of the 8th three cars of a passenger train on the New York & New England road were thrown from the track near East Medway, Mass., by a broken rail.

On the morning of the 12th several cars of a passenger train on the Whitewater road were thrown from the track near Connersville, Ind., by a broken rail. Three passengers were hurt.

On the morning of the 13th a freight train on the New York, Ontario & Western road struck a broken rail on a trestle bridge near Fulton, N. Y., and 12 cars were thrown from the bridge and fell 20 feet into a creek. The conductor and a brakeman were badly hurt.

On the morning of the 28th a freight train on the Chicago, St. Paul, Minneapolis & Omaha road was thrown from the track near Athens, Neb., by a broken rail.

DERAILMENT, BROKEN SWITCH-ROD.

Very early on the morning of the 24th a passenger train on the Missouri Pacific road was thrown from the track at Clarksburg, Mo., by a broken switch-rod. The engine was badly wrecked and the fireman hurt.

DERAILMENT, BROKEN BRIDGE.

On the morning of the 5th a trestle bridge on the Tonawanda Valley & Cuba road, near Rushford, N. Y., gave way under a passenger train and the tender and one car fell 18 ft. and were wrecked, injuring two trainmen and seven passengers.

DERAILMENT, SPREADING OF RAILS.

On the morning of the 2d a passenger train on the Western Railroad, of Alabama, was thrown from the track near Cusseta, Ala., by a broken rail, and the engine upset. Three trainmen were hurt.

On the night of the 4th the engine of a passenger train on the Philadelphia, Wilmington & Baltimore road was thrown from the track in Philadelphia by the spreading of the rails and upset.

On the afternoon of the 6th the engine of a passenger train on the Virginia Midland road was thrown from the track at Sandy Level, Va., by the spreading of the rails. The engineer, fireman and a brakeman were hurt.

On the morning of the 8th 14 cars of a freight train on the Savannah, Florida & Western road were thrown from the track near Taylor, Ga., by the spreading of the rails.

On the evening of the 9th several cars of a freight train on the Houston & Texas Central road were thrown from the track near Austin, Tex., by the spreading of the rails. Two brakemen were hurt badly.

On the afternoon of the 14th seven cars of a freight train on the Toledo, Ann Arbor & Northern Michigan road were thrown from the track near Pittsfield, Mich., by the spreading of the rails. A brakeman was killed.

On the evening of the 26th the engine and four cars of a passenger train on the New York & New England road were thrown from the track near Arnold's Mills, R. I., by the spreading of the rails.

On the morning of the 30th a passenger train on the Cincinnati Southern road was thrown from the track near Mason, Ky., by the spreading of the rails, caused by the softening of the road-bed after long rain. Four cars went down a very high bank and were badly broken. Nine passengers were badly hurt, the conductor and 31 passengers slightly injured.

DERAILMENTS, BROKEN WHEELS.

On the afternoon of the 1st seven cars of a freight train on the Pittsburgh, Fort Wayne & Chicago road were thrown from the track near Convoys, Ind., by a broken wheel. A brakeman was hurt.

On the evening of the 8th a car of a freight train on the New York Central & Hudson River road was thrown from the track at Fox Ridge, N. Y., by a broken wheel.

On the afternoon of the 13th the engine of a freight train on the Housatonic road was thrown from the track near Stepney, Conn., by the breaking of a truck wheel.

On the afternoon of the 14th a car of a freight train on the New York Central & Hudson River road was thrown from the track in Rochester, N. Y., by a broken wheel.

On the afternoon of the 21st several cars of a freight train on the New York Central & Hudson River road were thrown from the track near Gainesville, N. Y., by a broken wheel.

On the afternoon of the 24th several cars of a freight train on the New Brunswick Railway were thrown from the track on a bridge at Muniac, N. B., by a broken wheel. The accident broke down the bridge, and eight cars fell with it into the river.

On the night of the 28th several cars of a freight train on the Chicago, Milwaukee & St. Paul road were thrown from the track near Lake City, Minn., by a broken wheel. The conductor was slightly hurt.

DERAILMENTS, BROKEN AXLE.

On the morning of the 4th the engine of a freight train on the New York, Lake Erie & Western road was thrown from the track at Oxford, N. Y., by a broken truck axle.

Very early on the morning of the 6th the engine of a freight train on the Pennsylvania Railroad was thrown from the track near Lawrence, N. J., by a broken axle.

On the morning of the 8th several cars of a freight train on the Lake Erie & Western road were thrown from the track near Oxford, N. Y., by a broken axle.

On the morning of the 16th several cars of a freight train on the Pennsylvania Railroad were thrown from the track near Kinzer, Pa., by a broken axle. A brakeman was hurt.

DERAILMENTS, BROKEN TRUCK.

On the night of the 13th a car of a freight train on the New York Central & Hudson River road was thrown from the track near Macedon, N. Y., by a broken truck.

On the evening of the 17th several cars of a coal train on the Syracuse, Geneva & Corning road were thrown from the track near Cuddeback, N. Y., by the breaking of a truck. A brakeman was hurt.

On the morning of the 24th a car of a freight train on the New York, Lake Erie & Western road ran off the track in Belvedere, N. Y., by the breaking of the truck, and was damaged.

DERAILMENT, LAND SLIDE.

On the evening of the 7th a freight train on the Central Pacific road was thrown from the track near Truckee, Cal., by a land-slide.

DERAILMENT, SNOW.

On the afternoon of the 30th two cars of a passenger train on the Pennsylvania Railroad were thrown from the track near Meadows, N. J., by snow packed down in the rails.

DERAILMENTS, ACCIDENTAL OBSTRUCTION.

On the morning of the 20th several cars of a freight train on the Troy & Boston road were thrown from the track near Schaghticoke, N. Y., by a brake-beam, which fell down on the rails.

On the morning of the 27th six cars of a freight train on the Troy & Boston road were thrown from the track in Troy, N. Y., by a broken brake-beam falling on the rails.

On the evening of the 27th a freight train on the Chesapeake & Ohio road ran into a large rock which had fallen on the track in the approach to the Lewis tunnel, near Alleghany, Va. The engine and eight cars were piled up in a bad wreck, a brakeman fatally injured and three other trainmen less severely hurt.

On the morning of the 29th several cars of a freight train on the New York, Lake Erie & Western road were thrown from the track near Port Jervis, N. Y., by a broken brake-beam falling on the rails.

DERAILMENT, CATTLE.

On the morning of the 14th the engine and several cars of a freight train on the International & Great Northern road were thrown from the track near Cactus, Tex., by running over a cow.

DERAILMENTS, MISPLACED SWITCH.

On the morning of the 4th three cars of a freight train on the Ohio & Mississippi road were thrown from the track in Cincinnati, O., by a misplaced switch. Two trainmen were hurt.

On the afternoon of the 5th the engine of a passenger train on the New York Central & Hudson River road was thrown from the track in Charlotte, N. Y., by a misplaced switch.

On the morning of the 6th the engine and one car of a passenger train on the Indiana, Bloomington & Western road were thrown from the track in Sandusky, O., by a misplaced switch. The engineer was badly hurt.

On the evening of the 15th the engine and three cars of a freight train on the Louisville, New Albany & Chicago road were thrown from the track at Bradigan, Ind., by a misplaced switch.

On the morning of the 17th a freight train on the Chicago & Northwestern road was thrown from the track at Woodbine, Ia., by a misplaced switch. The engine and 14 cars were piled up in a bad wreck, the engineer and a brakeman killed and the fireman hurt.

On the night of the 19th a yard engine on the Gulf, Colorado & Santa Fe road was thrown from the track in Galveston, Tex., by a misplaced switch. Two brakemen were thrown under the engine and badly hurt.

On the night of the 24th the engine and several cars of a freight train on the New York Central & Hudson River road were thrown from the track in Lyons, N. Y., by a misplaced switch.

On the morning of the 25th a freight train on the New York Central & Hudson River road was thrown from a track near Rochester, N. Y., by a misplaced switch.

On the evening of the 25th the engine of a freight train on the New York Central & Hudson River road was thrown from the track in Rochester, N. Y., by a misplaced switch.

On the afternoon of the 27th the engine of a passenger train on the Central Pacific road was thrown from the track in East Oakland, Cal., by a misplaced switch.

UNEXPLAINED DERAILMENTS.

On the morning of the 1st a car of a freight train on the Pittsburgh, Cincinnati & St. Louis road ran off the track in Pittsburgh, Pa., and was thrown over against a passenger car passing on the other track. The car was damaged and three passengers hurt slightly by broken glass from the windows.

On the afternoon of the 1st a car in a freight train on the Rome, Watertown & Ogdensburg road jumped the track about three miles from Adams, N. Y., and was dragged all the way to that station on the ties, crossing on the way a bridge 200 ft. long. It was found that many ties were badly broken, and the spike heads and a thousand fish-plate bolts were cut off, and had to be replaced before the trains could pass.

On the afternoon of the 1st several cars of a coal train on the Central Railroad of New Jersey ran off the track near Raritan, N. J., blocking the road two hours.

On the morning of the 21st a construction train on the Oregon Short Line ran off the track near Shoshone, Idaho, damaging several cars and injuring 8 laborers.

Very early on the morning of the 4th a car of a freight train ran off the track on the Cincinnati, Indianapolis, St.

Louis & Chicago road in Cincinnati, O. The conductor and a brakeman were hurt.

On the afternoon of the 5th a yard engine on the New York Central & Hudson River road ran off the track in Rochester, N. Y., doing a little damage.

On the night of the 5th several cars of a freight train on the Delaware, Lackawanna & Western road ran off the track near Warsaw, N. Y., and were wrecked.

On the afternoon of the 6th two cars of a passenger train on the Concord road ran off the track in Concord, N. H. A passenger was hurt.

On the afternoon of the 6th a car of a freight train on the Pennsylvania Railroad ran off the track in Pittsburgh, Pa., and ran into a small building near the track, knocking it down.

On the morning of the 7th a car in a freight train on the Portland & Ogdensburg road jumped the track on a bridge in Westbrook, Me., and 14 cars followed it off the bridge and into the Presumpscott River, making a bad wreck.

On the night of the 7th a passenger train on the Albany & Susquehanna road ran off the track near Oneonta, N. Y. The fireman was hurt.

On the morning of the 8th a freight train on the Missouri, Kansas & Texas road ran off the track near Taylor, Tex., and the engine upset injuring the engineer and fireman.

On the evening of the 8th two cars of a freight train on the Louisville & Nashville road ran off the track near Memphis, Tenn., and a brakeman was hurt slightly.

On the morning of the 9th, near Van Wert, O., a passenger train on the Cincinnati, Van Wert & Michigan road ran off the track.

On the morning of the 11th the caboose of a freight train on the Evansville & Terre Haute road ran off the track near Owensville, Ind. Five trainmen were slightly hurt.

On the night of the 13th a freight train on the Rensselaer & Saratoga road ran off the track near Geiserville, N. Y., and 19 cars went into the ditch.

On the 17th a freight train on the Cherokee road ran off the track near Stilesboro, Ga., and the engine and six cars went into the ditch.

On the morning of the 18th seven cars of a freight train on the Illinois Central road ran off the track near Storm Lake, Ia., and several of them were wrecked.

On the morning of the 18th three cars of a passenger train on the East Tennessee, Virginia & Georgia road ran off the track near Macon, Ga., blocking the road several hours.

On the morning of the 19th a freight train on the Canadian Pacific road ran off the track on the bridge over Rouge River, near Calumet, Que., and five cars went off the bridge, falling 65 ft. to the river below.

On the morning of the 20th several cars of a freight train ran off the track at Georgetown, N. Y., on the Syracuse, Chenango Valley & New York road.

About noon on the 20th two cars of a freight train on the Rome, Watertown & Ogdensburg road ran off the track in Rome, N. Y., doing a little damage.

On the 22d a car of a passenger train on the St. John & Maine road ran off the track near Nerepis, N. B., and was badly damaged.

On the morning of the 23d the engine of a passenger train on the Manhattan Elevated road ran off the track near the Eighty-fourth street station in New York.

On the morning of the 24th the engine of a freight train on the New York, Lake Erie & Western road ran off the track near Salamanca, N. Y., blocking the road a short time.

On the night of the 24th the caboose of a freight train on the Central Railroad, of Georgia, ran off the track near Cuthbert, Ga., and ran across a long trestle bridge on the ties.

On the 26th a freight train on the New York, Texas & Mexican road ran off the track near Victoria, Tex., wrecking two cars.

On the afternoon of the 27th a freight train on the North Carolina road ran off the track near University, N. C., blocking the road several hours.

On the night of the 27th the engine and several cars of a freight train on the Indiana, Bloomington & Western road ran off the track in Bloomington, Ill., blocking the road several hours.

On the afternoon of the 29th several cars of a freight train on the Boston & Lowell road ran off the track near Lyndeboro, N. H., and were wrecked.

On the morning of the 30th a passenger train on the Indiana, Bloomington & Western road ran off the track near Yelverton, O., and two cars upset, injuring a passenger.

On the evening of the 31st a passenger train on the Chicago & West Michigan road ran off the track near Holland, Mich. A trainman was killed and two others hurt.

BOILER EXPLOSIONS.

On the afternoon of the 9th the locomotive of a freight train on the Chicago & Northwestern road exploded its boiler while standing on a siding in Rochelle, Ill. The engine was torn to pieces and made a complete wreck; the engineer and fireman were killed.

On the afternoon of the 12th the engine of a freight train on the Michigan Central road exploded its boiler, when near Grand Crossing, Ill. The whole front end of the boiler was torn to pieces, but the force of the explosion being forward, the engineer and fireman escaped.

BROKEN CONNECTING RODS.

On the afternoon of the 2d the engine of a freight train on the Lake Shore & Michigan Southern road broke a parallel rod near Elkhart, Ind., and the loose end smashed up one side of the cab, injuring the engineer badly.

On the morning of the 9th the engine of a freight train on the New York, Lake Erie & Western road broke a parallel rod near East Newark, N. J. The loose end tore out one side of the cab, injuring the engineer slightly.

On the morning of the 18th the engine of a passenger train on the New York, Lake Erie & Western road broke a parallel rod when near Cameron Mills, N. Y., and was pretty well smashed up.

On the evening of the 23d the engine of a passenger train on the Rome, Watertown & Ogdensburg road broke a parallel rod when near Taberg, N. Y., and the loose end tore out one side of the cab.

On the morning of the 29th the engine of a passenger train on the Boston & Albany road broke a parallel rod when near Cheshire, Mass., and one side of the cab was wrecked.

OTHER ACCIDENTS.

On the morning of the 2d a wheel broke under a baggage car in a passenger train on the New York, Lake Erie & Western road near Campbellton, N. Y., but the car did not leave the track.

On the morning of the 9th a car loaded with cotton on the New York, Lake Erie & Western road caught fire when near Calicoon, Pa., and was destroyed.

On the morning of the 13th a Pullman car in a passenger train on the Pennsylvania Railroad caught fire when near Wilmore, Pa., and was destroyed. The car was stopped in time for the passengers to escape.

On the evening of the 27th the draw-bar between the locomotive and tender of a freight train on the New York

& New England road broke near Readville, Mass., and the fireman was thrown down on the track and killed.

SUMMARY.

This is a total of 142 accidents, whereby 13 persons were killed and 137 injured; an increase of 43 accidents, a decrease of 16 killed and an increase of 36 injured, as compared with March of last year.

The three months of the current year show a total of 494 accidents, 129 killed and 522 injured; a monthly average of 165 accidents, 43 killed and 174 injured for the first quarter of the year, which has been an unusually bad season for accidents.

The New York Railroad Commission on the Cost of the Elevated Roads.

The investigation by the Railroad Commission authorized by the Legislature into the question of what rate of fare would yield 10 per cent. net income upon the capital actually invested in the elevated railroads of New York, resulted in the presentation by the Railroad Commissioners of majority and minority reports to the Legislature on Albany April 21. The majority report is signed by Messrs. Kernan and Rogers and the minority report by Mr. O'Donnell. Combining the cost of construction of the New York and Metropolitan roads, the Commissioners sum up as follows the expenditures for the entire elevated railroad system of New York:

First—As claimed by companies:
New York Elevated, expended by itself and the Manhattan Railway Co. \$10,336,732.00
Metropolitan Company, expended by New York Loan and Improvement and Manhattan companies 15,006,237.21
Discount on bonds of New York Co. 4,898,170.00
Discount on bonds of Metropolitan Co. 415,500.00

Grand total of construction \$30,646,639.27
Capitalized as follows:
Manhattan stock (nothing paid in) 13,000,000.00
New York Elevated stock 6,500,000.00
Metropolitan Elevated stock 6,500,000.00
New York Elevated funded debt 8,500,000.00
Metropolitan Elevated funded debt 12,818,000.00

Total \$47,318,000.00

Second—As found by Board:
Take amount as claimed by companies 30,646,639.27
Deduct items as shown, not pertaining to construction:
New York Company \$1,458,972.52
Metropolitan Company 1,190,763.61

Difference \$27,986,923.14
Deduct discount on bonds:
New York Company \$4,898,170.00
Metropolitan Company 415,500.00

Grand total cash cost, as found by Board \$22,083,253.14

The Commissioners find the structure of the roads to be generally in good condition. They recommended the construction of walks on the outside of the track. The books, papers and vouchers of the Manhattan Company were found to be in excellent condition, and every item was sustained by vouchers in detail. The Commissioners reviewed at length the financial affairs of the roads and their lessee, the Manhattan Company, and make the following statement of the condition of the roads:

The capital stock of the New York Elevated and Metropolitan roads was paid in and expended in full. In such case the entire discount fell upon the bonds. Take cash cost, excluding discount on bonds and all doubtful items, \$22,083,253.14. Deduct capital stock paid in, \$13,000,000; amount realized from \$21,318,000 of bonds, \$9,683,253.14. Take net earnings without deducting interest paid on bonds, \$1,716,149.37. Deduct 6 1/2 per cent. average interest on amount realized on bonds, \$629,417.29. Net incomes applicable to dividends, or 8 per cent. on \$13,000,000 capital stock paid in and expended, \$1,086,732.08.

The above is the most disadvantageous view possible to the elevated roads. It allows no interest on the discount of the bonds which the roads have to pay; no matter how improperly their negotiation was conducted, and no profit to the contractors. The amount of taxes paid by the elevated roads has been \$717,545. The amount unpaid and in litigation is \$1,593,838.95.

As shown by the papers herewith presented, the stock and bonds have been largely disposed of to the public by those who held them at the time of the leases and tripartite agreement. To what extent the present holders are bona-fide innocent purchasers cannot be ascertained; that many of them are such cannot be doubted. So many of them as are innocent purchasers had a right to suppose that they were protected by the railroad laws of the state from having bonds or stock improperly issued or negotiated. Their position should be considered in any legislation upon the subject.

As against those who watered the stock and inflated the bonds as before described, the proposed reduction of fare might be strict retributive justice. The dignity of the state would, however, hardly permit that an evasion of the spirit of law should, on its part, be met by a punishment devised so as to ignore the promises of the state. Whether the reduction of fare on the elevated roads "would with such profits produce less than 10 per cent. on the capital actually expended," the Board cannot intelligently answer. Many assert that the increased travel would more than make up the deficiency caused by the reduction. On the other hand, the roads insist to the contrary. The Commissioners can only say that upon the same number of passengers as were carried last year the roads would earn \$1,606,315 less. This would reduce the gross income so as to prevent the roads from even paying interest on their bonded debt in full. The laboring classes are carried between 5.30 and 8.30 a. m., and 4.30 and 7.30 p. m. at 5 cents. The reduction would not so much benefit them, therefore, as it would the class who are better able to pay 10 cents than the laborers are to pay 5.

The Commissioners, therefore, respectfully submit this report and the accompanying documents with the conclusions that it would be unjust and in violation of the letter and spirit of section 33 of the General Railroad act to reduce the fare on the roads at the present time.

A minority report is made by Commissioner O'Donnell, in which he says that while concurring in the report of his associates he is not able fully to agree with their definition of "capital actually expended," "net income" and some other minor matters. The report finds the following conclusions: That the elevated roads are not chartered or operated under the General Railroad act of 1850, but under special charters, under which charters the Legislature has reserved its sovereign right, under Article 8, Section 1, of the Constitution, to alter, amend or repeal at any time each and every one of these charters. There is no contract between the people of the state or the city of New York with either of these roads not to reduce the fare thereon. The Manhattan Railway Company was primarily organized to float thirteen

million of fictitious stock upon the public. It has, however, given to the city a well-organized system of roads, and it is now against the interests of the people for the Legislature or courts to dissolve its organization. It has not appeared by the examination that a judicious extending of the commission hours would materially decrease the gross receipts of the roads. The report therefore recommends the passage of a bill fixing the commission hours, with 5-cent fares, from 4 to 10 a. m., and from 3 to 9 p. m. The report also recommends the passage of an act making it the duty of the Railroad Commissioners to ascertain the cash capital actually expended in constructing and equipping each of the surface roads in the state, including street railroads, and report the same to the succeeding Legislature.

The American Iron Trade for 1882 and its Prospects.

The annual report of Mr. Swank, Secretary of the American Iron and Steel Association, says:

In our last annual report, issued in June, 1882, the fact was noted that the extraordinary activity in our iron and steel industries which had commenced in 1879, had culminated early in 1882, when the wants of consumers became less urgent and prices generally began to decline. This reaction was not sudden nor violent, but was indeed so gradual and tranquil that it not only for some time excited no apprehension of impending stringency, but was actually imperceptible to many manufacturers whose books still continued to receive liberal orders at satisfactory prices. In May, however, its existence was generally recognized, except by the workmen in the rolling mills of Pittsburgh and the West, who were harassed by the high prices of breadstuffs and provisions, consequent upon the extraordinary drought and the partial failure of the crops in 1881, and who unwisely insisted upon an advance in their wages. This demand was refused, and at the beginning of June nearly all the mills referred to were closed by a general strike, which continued until the last of September, when work was resumed upon the scale of wages which had previously prevailed. During the strike of four months the prices of rolled iron did not advance, notwithstanding the stoppage of so many mills—a fact which clearly demonstrated that the capacity to produce this form of iron had again, as in the panic years, exceeded the demand. As a result of the stoppage of these mills, the demand for pig iron declined, and its price, which in the spring months had sympathized with the general tendency, still further declined. After the resumption of activity in the rolling mills the prices of rolled iron and pig iron declined until the close of the year, and in November and December the market for these products was greatly depressed. Steel rails, which were the first of all iron and steel products to weaken in price, quotations having slightly receded as early as December, 1881, steadily declined in price throughout the whole year, the sharpest decline occurring in November and December, when the demand for future delivery almost came to an end from causes which will presently be referred to. This decline in the prices of steel rails had its influence in depressing the prices of rolled iron and pig iron already alluded to. At the beginning of December, 1881, the average price of steel rails at the mills was \$60 a ton, but in December, 1882, the average price was only \$39. In all the fluctuations of prices of iron and steel that have taken place in this country we know of none so sweeping as this decline in the prices of steel rails, if we except the fluctuations of 1879 and 1880, and many of these were entirely speculative.

The causes which contributed to the serious but in no sense disastrous reaction in our iron and steel industries in 1882 were many and various. These we shall enumerate as they occur to us, but possibly not in the order of their importance. First, it could not be expected that the extraordinary activity of all the industries of the country in the immediately preceding years would be continued indefinitely. Business currents have their ebbs and flows, and in 1882 these currents tended seaward. We had particularly reached the limit of speculative ventures, upon which legitimate business largely depends. Our iron and steel manufacturers could not resist these influences. Their best customers, the builders of new railroads, did not, it is true, build fewer miles of railroad in 1882 than in 1881, but it had become certain that much less money could be obtained for new railroads in 1883 than in 1882, and the consequent shrinkage in railroad mileage in the new year had therefore to be preceded by a largely decreased demand for railroad materials and by lower prices. Then, again, in the prosperous years referred to we had increased our capacity for the production of most forms of iron and steel much faster than the consumptive wants of the country had increased. We made this discovery in 1882, particularly in regard to steel rails. Again, the harvest of 1881, as already stated, was not generally favorable, and the farmers as a class were consequently unable in 1882 to make their usual purchases of farming implements and other articles which are composed wholly or in part of iron or steel.

Since the beginning of the present year the condition of our iron and steel industries has not improved. January and February were dull months, a specially depressing influence being the uncertainty of tariff legislation at Washington. Consumption is now, however, more active since the adjournment of Congress and the opening of spring than during the winter months, but prices are very low, competition is sharp, and the market for most products is in favor of buyers rather than sellers. Some leading influences which unfavorably affected our iron and steel industries in 1882 still remain, particularly the interruption to new railroad projects and the tendency to over-production in certain leading branches, to which must now be added the late reduction in duties, which goes into effect on the first of July. It seems to be absolutely certain that prices must for some time to come rule extremely low. This condition of affairs in the great industries under consideration may have its advantages in stimulating consumption at a time when the country is blessed with an abundance of good money, and in checking the erection of new rolling mills, blast furnaces and steel works, which experience has shown are not needed; but it is greatly to be regretted that it brings also low wages, with no compensating benefits to those who receive them. It is not true, as a certain class of political economists persistently teach, that when wages are reduced other things are correspondingly reduced in price; but, even if this were so, low wages and low prices always suggest hard times. We do not, therefore, regard it as a propitious sign that prices of iron and steel are now so low as they are. Good prices and good wages were far better. But the fact cannot be altered that low prices for iron and steel now prevail, and we can only hope that wages will be adjusted upon a scale that will be mutually satisfactory to manufacturers and their workmen.

Getting in the Window.

At the railroad station in West Cornwall, N. Y., the travelers were stupefied at seeing a young woman attempt the difficult feat of entering the car through the window. She had never before seen a railroad train, having lived in the inland country, and said she thought that was the regular method of ingress.

The Massachusetts Railroad Commission on Suburban Rates.

The following is the decision of the Massachusetts Railroad Commission on the petition of the selectmen and inhabitants of Medford in relation to fares on the Boston & Lowell Railroad:

Petitions from West Medford, Medford Hillside and College Hill ask the board to recommend a reduction of fare, and especially a reduction of the rate for commutation or package tickets. The distances are 5.49, 4.61 and 4.21 miles. The price of package tickets is for West Medford 10 cents, and for the other stations 8 cents. A special reason for asking a reduction of West Medford fares is that the Boston & Maine Railroad charges only 8 cents for commutation tickets to Medford Centre, which is only a quarter of a mile farther from Boston. The low rate on a branch of the Boston & Lowell to Elm street station—6 cents for commutation tickets for four miles—was also urged as a strong reason for reducing fares to points at nearly the same distance. The petitioners from all these points believe that a decrease of fare would lead to a large increase of business, and would ultimately benefit the railroad company. They argued that their villages would have a much greater population if they were encouraged by lower rates, and they especially spoke of the healthful and desirable country about Medford Hillside, now sparsely settled, but well fitted for suburban residences, if it could have the desired railroad facilities.

The respondents answered that their road hardly does a paying business at its present rates, and that its last year's returns show an actual loss in passenger traffic; they denied any value to suburban business, and they also declare that the numerous trains required by popular demand make it necessary to sustain the present rates of fare or something very near them. Upon the question of reducing the number of trains stopping at these stations, there was some difference of opinion among the petitioners. The number is great, and a few years since it would have been regarded as extravagant, but it is evident that not one of the trains now stopping at West Medford (40 in number) could be withdrawn without causing general discontent.

A comparison of suburban rates on the various roads within 10 miles of Boston shows that the rates in question are as low as the average in like cases, excluding the New York & New England Railroad, which is trying with success an experiment of 5-cent fares for five miles.

It is not shown that, in comparison with other roads, the fares on this portion of the Boston & Lowell road are exorbitant.

As a matter of policy, the members of the Board certainly believe that it would be wise for the company to make a considerable reduction in its fares to and from the points in question. We cannot agree with the theory of the representatives of the company that short suburban travel is wholly unprofitable. That theory, if correct, would lead to the belief that, if half a dozen or more miles from the railroad terminus of Boston were turned into a desert, it would be gain to the railroad companies. We do not believe this is true. In considering the question, regard should be had not only to the passenger traffic between Boston and suburban points, but to all the traffic, and to passenger and other business between those places and more distant points on each road. A policy which builds densely populated villages on the line of a road is in the end profitable to the company. And the managers of the Boston & Lowell road need not look farther than the neighborhood of Elm street to see this. There vacant land has been crowded with dwelling houses as a result of low fares; and a profitable business has been created for the steam road as well as for the street railway.

The reason for this particular low fare is no doubt the competition of this street railway, and a refusal of corresponding fares for points a little farther distant is notice to the people that to establish such competition is the only way to secure low rates.

The argument drawn from the apparent loss on passenger traffic on the whole operation of the Boston & Lowell railroad is fallacious. It will not be denied by its managers, or any railroad managers, that it is impossible to apportion certain general expenses to the passenger and freight departments, so that the exact cost of each can be ascertained. And it is admitted that in the returns of this company an error of computation occurs, the computation of which shows a small balance of profit, instead of loss, from the passenger traffic.

But the true answer to this objection is that low fares, if not excessively low, are calculated not to diminish, but to increase receipts. Just because the road needs larger profits, it is desirable to reduce these fares. The increase would result from two sources—the greater disposition to travel on the part of those now residing on the line, and the addition to the number. This locality appears to be in every way suited for suburban residences. It apparently lacks nothing except cheaper transportation to greatly increase in population.

It is said that the reason why a greater increase of population has not occurred is the inconvenient and disagreeable approach to the Boston terminus of the road. But this objection, which has now been removed by street improvements, applied as well to all the northern stations, and there are many places upon the northern lines whose growth has not been hindered by it. The residents whom it is proposed to attract to the locality cannot be assumed to be more fastidious than those who pour through the same streets on their way to and from their summer homes and crowd the cars of the Eastern Railroad.

It is our belief that the Boston & Lowell Railroad Co. would find it profitable to reduce its rates at these and at other similar stations. But, as the Board had occasion to say before on a like question, "It is not, however, for the Board of Railroad Commissioners to undertake to instruct those managing the roads as to the proper way to manage them commercially, provided that they do not manage them unreasonably." (11th Report, p. 219.) It is unnecessary to say that, on steam railroads, we have no power and we have no desire to have power to fix rates.

Where accommodations are unreasonably refused, or where rates are unreasonably high, the Board formally recommends a change in the mode of operating the road; and, if the advice is not followed, an appeal can be made to the General Court. Perhaps such an appeal could not be made in the case of the Boston & Lowell Railroad Co., whose charter in regard to legislative control differs from all others. But, in giving advice, formal or informal, the Board has always found the managers of this company as ready to receive and to follow it as if it were sustained by a chance of legal intervention.

Our suggestion to the managers is that they carefully consider the question whether a revision and reduction of suburban fares would not, by promoting the convenience of their customers and by enlarging their number, increase also the profits of the corporation.

The original petition in this case was presented some time since, but it has been delayed at the request of the petitioners for the sake of hearing fully other requests of like nature. In the mean time, the managers of the company have re-

vised the way rates complained of, and have wisely established a minimum of 5 cents instead of 10 cents. They have also promised that the well-grounded complaints as to the condition of the stations shall be met as soon as the state of the weather permits.

ANNUAL REPORTS.

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Burlington, Cedar Rapids & Northern.

At the close of the last fiscal year, Dec. 31, 1882, this company worked the following lines:

Miles.
Main Line, Burlington, Ia., to Albert Lea, Minn., 252.0
Milwaukee Division, Linn, Ia., to Postville, 94.0
Pacific Division, Vinton, Ia., to Holland, 48.0
Muscatine Division, Muscatine, Ia., to Riverside, 31.0
Iowa City Division, Elmira, Ia., to Montezuma, 83.0
Iowa Falls Division, Holland, Ia., to Worthington, Minn., 182.0
Clinton Division, Clinton, Ia., to Noel, 23.5
Total, 713.5

Additions during the year were the extension of the Iowa Falls Division from Emmetsburg, Ia., to Worthington, Minn., 69 miles. Of the total 288.5 miles are under the organization of the Iowa City & Western, the Chicago, Clinton & Western, and the Cedar Rapids, Iowa Falls & Western companies, which are all entirely owned by this company.

The main line from Manly Junction to Northwood, 11 miles, is leased from the Central Iowa Co., and from the Iowa line to Albert Lea, 12.5 miles, it is leased from the Minneapolis & St. Louis Co.

Arrangements have been made to extend the Clinton Division from Noel to a junction with the main line near Cedar Rapids.

The average mileage worked was 637.94 miles last year, against 564.33 miles in 1881.

The equipment consists of 76 locomotives; 20 passenger, 2 chair, 12 combination and 10 baggage, mail and express cars; 1,860 box, 15 refrigerator, 103 stock, 485 flat and coal and 64 caboose cars; 1 directors' car, 1 pay car, 10 service cars, 6 snow-plows, and 224 hand and rubble cars. Since the close of the year 400 new box cars have been added.

The general account, condensed, is as follows:

Stock, \$10,000,000.00	
Funded debt, 9,984,000.00	
Bills, accounts and balances payable, 455,552.46	
Income account, 2,824,462.03	
Total, \$23,244,014.49	
Cost of property, including leased lines, \$17,800,364.18	
Stock not issued, 4,500,000.00	
Interest, 484,023.85	
Materials, 204,478.14	
Cash and cash assets, 254,548.32	
Total, 23,244,014.49	

The funded debt consists of \$6,500,000 first-mortgage 5 per cent. bonds; \$150,000 Minneapolis & St. Louis 7 per cent. bonds guaranteed; \$825,000 Cedar Rapids, Iowa Falls & Northwestern 6 per cent. and \$1,905,000 of the same company's 5 per cent. bonds; \$584,000 Iowa City & Western 7 per cent. bonds. The interest charge is \$521,130 yearly. The debt was increased \$905,000 during the year.

The traffic for the year was as follows:

1882.	1881.	Inc. or Dec.	P. c.
Train miles, 1,775,642	1,591,270	I. 184,372	54.8
Passenger, 1,767,871	1,582,271	I. 185,600	63.1
Switching and serv'g, 297,794	302,826	D. 5,032	1.7
Total, 2,841,307	1,886,367	I. 954,940	50.6
Passengers carried, 584,740	439,508	I. 145,232	33.0
Passenger-miles, 27,277,487	14,876,355	I. 12,401,132	83.4
Tons freight carried, 2,225,955	1,716,182	I. 509,773	29.7
Ton-miles, 109,087,922	127,994,018	I. 71,083,904	55.6
Av. train load, 35	30	I. 5	16.7
Freight, tons, 113	118	D. 5	4.2
Av. receipts, 2.344 cts.	2.830 cts.	D. 0.486 ct.	17.2
Per passenger-mile, 1.196 "	1.392 "	D. 0.196 "	14.1

Locomotive service cost 18.37 cents per mile run. In included in freight traffic are 387,801 tons of company freight, carried 24,181,017 miles free. The rate per ton-mile is on paying freight only.

The earnings for the year were as follows:

1882.	1881.	Inc. or Dec.	P. c.
Freight, \$2,092,679	\$1,782,521	I. \$310,158	17.4
Passengers, 639,506	422,014	I. 217,492	51.5
Mail and express, 64,297	50,302	I. 13,995	27.4
Rents, 4,200	4,200		
Total, \$2,800,682	\$2,259,037	I. \$541,645	24.0
Expenses, 1,883,681	1,626,850	I. 256,831	15.8
Net earnings, \$917,001	\$632,187	I. \$284,814	45.1
Gross earn. per mile, 4.390	4.003	I. 387	9.7
Net earn. per mile, 1.437	1.120	I. 317	28.3
Per cent. of exps., 67.23	72.02	D. 4.79	

There were used in renewals during the year 2,689 tons of steel rails and 154,073 new ties, and 41.75 miles of road were ballasted. Six spans of trestle and three spans of

wooden truss bridge were built and 1,654 ft. trestle rebuilt. The income account is as follows:

Net earnings, as above, \$917,001.17	
Miscellaneous receipts, 78,057.70	
Total, \$995,058.87	
Interest paid, \$484,623.85	
Improvements and construction, 71,965.00	
New equipment, 368,502.41	
Other expenditures, 22,396.32	
Total, 947,487.58	
Surplus for the year, \$47,571.29	
Balance of income, Jan. 1, 1882, 1,829,403.16	
Balance, Jan. 1, 1883, \$1,876,974.45	

Since the organization of the present company the sum of \$2,437,427 has been expended for net earnings in improvements, new equipments and other additions to property.

The report says: "The company owns 33 miles of road, exclusive of the Clinton Division, upon which no incumbency exists; the Pacific Division, from Traer to Holland, 23 miles; the main line, from Plymouth Junction to Manly Junction, and from Northwood to Minnesota state line, a distance of 10 miles. These extensions were made by the company, and paid for out of surplus earnings. At the time of the organization of the present company by the bondholders of the Burlington, Cedar Rapids and Minnesota Co., a bonded indebtedness of \$6,500,000 was created, and the capital stock of the new company was limited by its articles of incorporation to \$10,000,000. The statute of Iowa provides that corporations formed for pecuniary profit must not incur an indebtedness at any one time in excess of two-thirds of their capital stock. In consequence of the limitations thus imposed by the statute, the bonded indebtedness of the company cannot be increased in excess of \$166,000 over and above the amount originally created, except by an increase of capital stock, and with \$4,500,000 of the capital stock already provided for still remaining in the company's treasury and that issued quoted below par in the market, it is deemed inexpedient to provide for an increase of capital stock simply for the purpose of enabling the company to increase its bonded indebtedness.

"The extensions above referred to and the expense thereof, defrayed out of surplus earnings, cost approximately \$300,000. Under the arrangements made for the completion and operation of the Clinton Division line of road, the company's treasury will be reimbursed for the sum expended in the purchase and improvement of this property, which, at the present time, without interest, amounts in the aggregate to \$290,000.

"At the time of the organization of the company no fund was provided or provision made for improvement or equipment of the railway property, except 390 of the issue of \$6,500,000 of 5 per cent. bonds. But the net proceeds of these bonds (390) were principally absorbed by payment of supply and other claims adjudged by the courts to be equitable liens upon the railway property, paramount to the mortgage lien of the bondholders of the old company.

"The claims in suit of the trustees in bankruptcy of Henry Clews & Co., alluded to in the annual report, Dec. 31, 1880, have been settled, and with this all litigation growing out of the bankruptcy of the old company and the fore closure of the several mortgages has come to a final end.

"At the time of the bankruptcy of the old company, and the appointment of a receiver, at the instance of its bondholders, the company's railway property was so far out of repair as to render it unsafe to employees, and dangerous to the public to operate; and this was its condition, except such improvements as the Receiver, out of the limited resources at his command, was able to place upon it while in his hands, when the present company took the control, under the plan of re-organization adopted by the bondholders.

"The condition of the property as thus described, together with the fact that no provisions were made for its improvement and the procurement of the requisite amount of additional equipment, the policy of appropriating surplus earnings, of necessity, therefore, had to be adopted, and continued from year to year to enable the company to discharge its duties toward the public as common carrier of persons and property, and to operate its road economically and with profit to its stockholders.

"The sum thus expended since the organization of the company to the close of the present fiscal year amounts in the aggregate to \$1,743,121.77. While the stockholders, for reasons stated, have not received dividends upon their stock, the surplus earnings thus expended have provided for them a railway with equipment equal to other first-class lines in Iowa."

Flint & Pere Marquette.

The lines owned and worked by this company at the close of its last fiscal year, Dec. 31, 1882, were as follows:

Miles.
Main Line, Monroe, Mich., to Ludington, 253.31
East Saginaw & Bay City Branch, 12.35
East Saginaw & Mt. Pleasant Branch, 15.02
South Saginaw Branch, 4.68
Harrison Branch, 15.50
Outer Lake Branch, 19.51
Manistee Branch, 26.53
Total, 346.90

Additions during the year were 1 mile to the Manistee Branch and 0.74 mile to the South Saginaw Branch, a total of 1.74 miles.

The equipment consists of 70 locomotives; 44 passenger, 5 parlor, 5 sleeping and 15 baggage, mail and express cars; 823 box, 8 stock, 851 flat and 32 caboose cars; 2 snow-plows, 16 service cars, 85 hand and 75 lorry cars. There are also 2 locomotives, 2 passenger cars, 1 baggage car and 25 freight cars of 3 ft. gauge on the Saginaw & Mt. Pleasant Branch.

The Land Commissioner reports sales of 29,079 acres in 1882 for \$306,269.95, an average of \$10.53 per acre. In addition sales of timber amounted to \$42,190.33, and of town lots to \$2,863. The total sales to Dec. 31, 1882, were 401,687 acres, for \$4,512,106. Cash collections on land account during the year were \$507,528.08. There were on Dec. 31 last 109,816 acres unsold, and land notes whose principal amounted to \$675,844.41. Expenses of the department for the year were \$13,384.91, and taxes paid, \$10,314.81. The trustees report \$350,000 bonds paid off during the year, and \$18,000 paid for interest.

The general account, condensed, is as follows:

Stock, \$6,500,000.00	
Funded debt, 5,028,000.00	
Premium on bonds sold, 142,459.75	
Avails of land sales to reduce bonded debt, 743,000.00	
Accounts and balances, 230,028.37	
January dividend, 227,500.00	
Profit and loss, 35,613.52	
Total, \$12,966,601.64	
Road and equipment, \$11,754,789.39	
Manistee Branch, steamers, etc., 750,785.34	
Materials, 220,382.25	
Sundry accounts, 107,616.85	
Cash, 115,027.81	
Total, 12,966,601.64	

The funded debt consists of \$1,000,000 Holly, Wayne & Monroe bonds; \$75,000 Bay County bonds; \$300,000 Flint & Holly lease bonds; \$3,000 land-grant bonds (paid off

since the end of the year), and \$3,650,000 general mortgage bonds. During the year \$562,000 bonds were sold, and \$355,560 paid off. The trustees hold \$300,000 of the general mortgage bonds.

The traffic for the year was as follows:

	1882	1881	Increase	P. c.
Passengers carried.....	994,225	813,131	181,094	22.3
Passenger-miles.....	20,546,975	24,449,135	5,097,780	20.8
Tons freight carried.....	1,137,589	1,013,965	123,624	12.2
Ton-miles.....	92,953,733	80,894,052	12,059,681	14.9

Of the total freight carried in 1882 there was 28.01 per cent. lumber, 31.88 per cent. logs, 8.41 per cent. salt, 6.62 per cent. coal, and 3.47 per cent. grain. There was a decrease in logs, but a considerable increase in lumber carried.

There were \$562,000 bonds sold during the year, at a premium amounting to \$34,702.50. Expenditures on capital account were, for construction, \$258,125.18; equipment, \$111,384; two steamers for the Lake Michigan line, \$130,300.46; Manistee road, \$93,253.01; coupons funded and interest, \$23,435.20; total, \$616,497.85.

The earnings for the year were as follows:

	1882	1881	Increase	P. c.
Freight.....	\$1,317,042	\$1,137,367	\$179,675	15.8
Passengers.....	795,839	655,478	140,361	21.6
Mail and express.....	50,013	43,089	6,924	16.1
Miscellaneous.....	2,325	1,177	1,148	97.4
Total.....	\$2,165,219	\$1,867,121	\$298,098	15.9
Expenses.....	1,432,209	1,315,322	116,887	8.9
Net earnings.....	\$733,010	\$552,390	\$180,620	32.7
Gross earn. per mi.....	6.241	5.879	.362	6.2
Net.....	2.113	1.739	.374	21.5
Per cent. of exps.....	66.15	70.42	-3.27	

The business of the year showed a very considerable increase. This gain has continued during the first quarter of the current year, although expenses have increased also, on account of the severe winter.

The income account was as follows:

Net earnings, as above.....	\$733,010.13
Interest paid, less interest received.....	\$294,020.24
Dividends, 6½ per cent.....	422,500.00
	716,520.24

Surplus for the year.....	\$16,489.89
Balance, Jan. 1, 1882.....	19,123.63
	\$35,613.52

Balance to credit of income, Jan. 1, 1883..... \$35,613.52

There were used in renewals during the year 1,697 tons steel rails and 133,049 new ties. There were 70 miles of road ballasted and 1,600 ft. of trestle bridge filled in. There were 19.43 miles of new sidings and spurs built. Besides repairs to fences 39.97 miles of new fence were built. One Howe truss bridge of 72 ft. span was built and general repairs made to other bridges.

The Manistee Branch has cost \$461,894.31. The stock being \$400,000 (all held by this company), the amount in excess is charged in the accounts as an advance to the Manistee Railroad Co. The work of 1882 included the completion of the road and buildings, with the extension of the road one mile into Manistee, through a very heavy cutting. The Saginaw & Clare County road (Harrison Branch) has cost \$61,425.66.

Of the sidings reported, 49.88 miles are for station service, 13.81 miles for passing trains, and 75.03 miles are spurs and sidings to mills, etc., which produce business for the road.

The two steamers owned by the company on Lake Michigan have done very well, although their trips were somewhat interrupted by the unusual severity of the winter.

Chicago, Milwaukee & St. Paul.

The report of this company for the year ending Dec. 31, last, shows that the total mileage owned and worked at the close of the year was 4,520 miles, an increase of 303 miles during the year. A detailed statement of the mileage was published last week. The average mileage worked was 4,206 miles, against 3,830 miles in 1881.

The equipment consists of 629 locomotives; 240 passenger, 33 sleeping, 6 parlor, 6 dining and 176 baggage, mail and express cars; 12,006 box and caboose, 2,364 stock and 4,154 flat and coal cars; 33 wrecking, tool and other service cars. The increase during the year was 90 locomotives; 23 passenger, 6 sleeping, 6 dining, and 41 baggage, mail and express cars; 970 box and 945 stock cars; 1 service car. There was a decrease of 131 flat and coal cars.

The general account, condensed, is as follows:

Common stock.....	\$27,904,261.00
Preferred stock.....	16,447,483.00
Funded debt.....	89,635,500.00
Land department.....	1,787,508.90
Bills, accounts and balances payable.....	7,160,502.48
Income account, balance.....	3,619,407.54
Total.....	\$146,554,662.92
Cost of road.....	\$137,631,949.12
Other permanent investments.....	2,096,635.22
Materials on hand.....	1,465,112.82
Accounts and balances receivable.....	573,724.44
Land notes on hand.....	1,787,508.90
Cash.....	2,963,732.42
	146,554,662.92

There was an increase during the year of \$2,046,000 in preferred stock; of \$7,500,000 in common stock, and of \$9,468,755 in funded debt. The cost of road increased \$17,558,320.03 during the year.

The bonded debt in detail was as follows on Dec. 31 in 1882 and 1881:

	1882	1881
Consolidated mortgage 7 per cent.....	\$11,083,000	\$11,738,000
La Crosse Div., firsts, 7 per cent.....	5,372,000	5,673,000
Iowa & Minnesota Div. firsts, 7 per cent.....	3,201,000	3,431,000
Prairie du Chien Div. firsts, 8 per cent.....	3,674,000	3,674,000
seconds, 7 3/4 per cent.....	1,241,000	1,300,000
Chi. & Milwaukee Div. firsts, 7 per cent.....	2,393,000	2,494,000
St. Paul Div., 7 per cent.....	3,805,000	3,998,000
Iowa & Dakota Div., 7 per cent.....	541,000	558,000
Iowa & Dakota Div. Extension, 7 per cent.....	3,505,000	3,814,000
Hastings & Dakota Div., 7 per cent.....	89,000	97,000
Hastings & Dakota Div. Extension, 7 per cent.....	5,290,000	5,290,000
Southwestern Div., 6 per cent.....	4,000,000	4,000,000
La Crosse & Davenport Div., 5 per cent.....	2,500,000	2,500,000
Chi. & Pacific Div., 6 per cent.....	3,000,000	3,000,000
Chi. & Pacific Western Div., 5 per cent.....	14,380,000	9,200,000
Southern Minnesota Div., 6 per cent.....	7,432,000	7,203,000
Mineral Point Div., 5 per cent.....	2,840,000	2,160,000
Dubuque Div., 6 per cent.....	6,710,000	6,132,000
Wisconsin Valley Div., 6 per cent.....	1,700,000	1,700,000
Wisconsin & Minnesota Div., 5 per cent.....	3,335,000	3,335,000
Chi. & Lake Superior Div., 7 per cent.....	1,360,000	1,360,000
Second-mortgage bonds, 7 per cent.....	387,000	387,000
Land-grant income bonds, 7 per cent.....	318,000	352,000
Minnesota Central bonds, 7 per cent.....	123,000	123,000
Milwaukee & Western, 7 per cent.....	215,000	215,000
Wisconsin Valley old bonds, 7 per cent.....	1,106,500	1,109,745
Oshkosh & Miss. River, 8 per cent.....	35,000	
Total.....	\$89,635,500	\$80,168,745

The yearly interest charge is \$5,598,223, or \$1,317 per mile of road.

The interest due in January amounts to \$2,593,312.50. Deducting this from the cash in hand, the statement of floating liabilities and assets is as follows:

Incumbrances assumed.....	\$6,755.00
Bills payable.....	2,712,038.48
Unpaid vouchers and pay-rolls.....	2,216,622.84
Miscellaneous accounts, current balances.....	2,141,916.27
Dividends and interest unclaimed.....	83,162.89
Total floating liabilities.....	\$7,190,502.48
Due from agents and other companies.....	\$226,986.62
Miscellaneous accounts, current balances.....	345,137.82
Bills receivable.....	1,600.00
Cash on hand over January interest.....	376,419.92
	950,144.36

Balance of floating debt..... \$6,210,358.12

There are also \$1,787,508.90 bills receivable for land sold, but these can hardly be regarded as a cash asset, as they could not be made available for the payment of floating debt, unless made the basis of an issue of some kind of bonds. The materials on hand are needed for the use of the road, and cannot be considered as a cash asset; they are, indeed, in the nature of an advance on the working expenses of the current year, but a company with so large and extended a system must always carry a large stock of supplies, and it is doubtful whether the amount on hand could be safely reduced to any considerable extent.

The traffic for the year was as follows:

	1882	1881	Increase	P. c.
Train-miles.....	4,495,232	3,489,438	1,005,794	28.8
Passenger.....	11,689,802	9,752,800	1,937,002	19.7
Freight.....	2,120,237	1,714,292	405,945	23.6
Service.....	18,305,321	14,956,530	3,348,791	22.3
Passengers carried.....	3,956,814	2,985,885	970,929	32.5
Passenger-miles.....	200,790,926	137,940,086	62,850,840	45.6
Tons freight carried.....	5,127,767	4,276,088	851,679	19.9
Ton-miles.....	945,250,159	697,347,607	247,902,552	35.5

Av. train load: Passengers, No. 45 40 5 12.5 Freight, tons 81 71 10 14.0

Freight-train mileage includes freight switchings, which reduces unfairly the average train-load. Of the passenger-miles 45.5 per cent were east-bound and 54.5 per cent west-bound; of the ton-miles, 48.4 per cent. east-bound and 51.6 per cent. west-bound.

The average receipts per train-mile and per unit of traffic were as follows, in cents:

	1882	1881	Increase	P. c.
Earnings per mile, pass. trains.....	115.00	113.00	2.00	1.8
" freight trains.....	120.00	122.00	-2.00	-1.6
Expenses per mile, all trains.....	75.00	78.00	-3.00	-3.8
Earnings per pass.-mile.....	2.58	2.86	-0.28	-9.8
" ton-mile.....	1.48	1.70	-0.22	-12.9

The average receipt per passenger-mile east-bound was 2.63 cents; west-bound, 2.55 cents; average, 2.58 cents. The average per ton-mile east-bound was 1.50 cents; west-bound, 1.46 cents; average of all, 1.48 cents.

The cost of maintenance of track and bridges was 13.7 cents per train-mile. The cost of locomotive service was 24.1 cents per mile run, of which 5.1 cents were for repairs, 11.3 cents for fuel and supplies and 7.7 cents for wages.

The average rate per ton-mile received for freight for 18 years past has been as follows, in cents:

1865.....	4.11	1871.....	2.54	1877.....	2.08
1866.....	3.76	1872.....	2.43	1878.....	1.80
1867.....	3.94	1873.....	2.50	1879.....	1.72
1868.....	3.49	1874.....	2.38	1880.....	1.76
1869.....	3.10	1875.....	2.10	1881.....	1.70
1870.....	2.82	1876.....	2.04	1882.....	1.48

The rate last year was only 36 per cent. of the rate of 1865.

Extraordinary expenditures during the year were \$4,978,286.17, the chief items being \$3,187,604.76 for new equipment, \$25,944.57 for the new shops at Minneapolis, \$261,518.27 for the new shops at Milwaukee, and \$299,397.66 for new sidings at various points.

The earnings for the year were as follows:

	1882	1881	Increase	P. c.
Freight.....	\$14,002,335	\$11,882,796	\$2,119,539	17.8
Passengers.....	5,179,078	3,938,989	1,240,089	31.5
Mail, express, etc.....	1,205,313	1,201,677	3,636	0.3
Total.....	\$20,386,726	\$17,025,462	\$3,361,264	19.7
Expenses.....	12,186,073	10,317,931	1,868,142	18.1
Net earnings.....	\$8,200,653	\$6,707,531	\$1,493,122	22.3
Gross earn. p. mile.....	4.746	4.445	.301	6.8
Net.....	1.909	1.751	.158	9.0
P. c. of expenses.....	59.77	60.92	-1.15	

The increase in both gross and net earnings was large and was made in the face of lower rates on the traffic. The earnings were helped very much by heavy immigration to Dakota, which set in last year.

The income account is as follows:

Net earnings, as above.....	\$8,200,652.65
Premiums on bonds and stocks.....	109,604.00
Dividends received.....	38,358.04
Cash from land sales.....	475,851.58
Total.....	\$8,824,466.27
Interest on bonds.....	\$4,786,053.50
October dividend, 3½ per cent. on all stock.....	1,242,841.04
	6,028,894.54

Surplus for the year..... \$2,795,571.73

Surplus, Jan. 1, 1882.....	\$5,593,010.85
Less April dividend, 3½ per cent. on all stock.....	1,218,201.04
Less income applied toward paying for 71,019.48 shares common stock, taken at par by shareholders.....	3,550,974.00
Total deductions.....	\$4,769,175.04
	823,835.81

Total surplus, Jan. 1, 1883..... \$3,619,407.54

President Mitchell's report says: "During the year the company has constructed the following branches and extensions: In Iowa the Chicago & Pacific Western Division has been completed to Council Bluffs, 64 miles, making a continuous road on the shortest practicable line, 488 miles in length, from Chicago to a connection with the Union Pacific and other roads at the Missouri River. On the Iowa & Dakota Division a branch has been constructed from Spencer to Lake Okoboji, 17 miles, and the Emmetsburg Branch has been extended 7 miles to Esterville. The Volga Branch of the Dubuque Division has been extended to West Union, the county seat of Fayette County, 14 miles. Of the line from Cedar Falls to Ottumwa 2 miles have been completed and 10 miles graded ready for the track, and depot grounds purchased at Ottumwa. The narrow-gauge road, formerly owned by the Iowa Eastern Railroad Co., extending from Beulah, on the Iowa & Minnesota Division, to Stulka, 15 miles, has been purchased and changed to standard gauge. These add 119 miles to the company's lines in Iowa.

"In Wisconsin a branch has been constructed from Brandon on the Northern Division to Markesan, 12 miles; and the Chippewa Valley & Superior Road, extending from Wabasha, Minn., to Eau Claire, Wis., 50 miles, including a bridge over the Mississippi River, with a branch from Red

Cedar Junction to Cedar Falls, 21 miles, has been purchased. These add 83 miles to the company's lines in Wisconsin.

"In Illinois there has been constructed a branch, 3 miles in length, from Galewood on the Chicago & Pacific Division to Dunning.

"In Minnesota a branch has been constructed from a point on the River Division, near Hastings, to Stillwater, 25 miles; and a line from Northfield on the Iowa & Minnesota Division to a point near Red Wing on the River Division, 32 miles. These add 57 miles to the company's lines in Minnesota.

"In Dakota a road has been constructed from Yankton on the Sioux City & Dakota Division to Scotland on the Running Water Branch of the Iowa & Dakota Division, 27 miles; and one from Mitchell on the main line of the Iowa & Dakota Division north to Letcher, 14 miles. These increase the mileage in Dakota 41 miles, and make a total increase of 303 miles during the year, which, added to the 4,217 miles owned by the company as by the last report, make it the owner of 4,520 miles of completed railroad.

"On the road purchased from the Chippewa Valley & Superior Co. there is annually manufactured 300,000,000 feet of pine lumber, besides shingle and lath, nearly all of which, instead of being rafted as hitherto down the Chippewa and Mississippi rivers to Dubuque and St. Louis and points between those cities, will now be sent direct from the saw mills to the farmers of Minnesota, Dakota and Iowa, over the lines of this company. What is said here of the Chippewa Valley & Superior line applies equally to the branch to Stillwater and the Wisconsin Valley line. Besides their importance as furnishing a large and most needed supply of lumber, these lines pass through a rich and well settled country and furnish desirable business connections.

"The short pieces of road constructed in Dakota from Yankton to Scotland and from Mitchell north are in what is known as the James (or Dakota) River Valley, and are intended to form parts of the line of this company extending from Yankton through the valley. Of this line 73 miles, from Ellendale to Ashton, were constructed during 1881, and connect with the Hastings & Dakota line at Aberdeen. The distance from Ashland to Letcher is 75 miles, and from Mitchell to Scotland 45 miles. The construction of these two links would give the company a continuous line from Sioux City and Yankton through the said valley to within 65 miles of the Northern Pacific road. The valley is renowned for its fertility, is being rapidly occupied by thrifty and industrious settlers, and will soon furnish a large business.

"In the last annual report it was shown that the company had, during the year 1881, paid \$575,000 for real estate; yet, large as these purchases were, the company has been compelled by increased business to buy additional grounds for terminal facilities in Chicago, Milwaukee and St. Paul, and for machine shops in Minneapolis, with additional grounds at other points, costing in all \$259,320.03.

"In the last annual report it was stated that, for the purpose of securing a reliable supply of fuel to meet the large and growing wants of the company, coal lands had been purchased at Braceville, Ill., and Oskaloosa, Ia. During the year additional coal lands have been purchased at Perry on the Council Bluffs line, about 125 miles east of Council Bluffs. The coal lands of the company consist of 3,282 acres at Braceville, with 117 houses and three shafts, costing \$426,823.61; 2,017 acres at Oskaloosa, with 107 houses and three shafts, costing \$268,748.65; and 240 acres at Perry, with 23 houses and one shaft, costing \$35,069.55. The Braceville mines furnished during the year 242,136 tons of coal, the Oskaloosa mines 196,998 tons, and the Perry mine 3,000 tons, being about two-thirds of the consumption for the year. These mines are deemed capable of furnishing a full supply for all the requirements of the company. The total cost of these properties is \$730,641.81.

"The lands stated in the last report as belonging to the company have all been sold except about 100,000 acres, mostly in Wisconsin. The net receipts to the treasury of the company from sales of land during the years 1881 and 1882 were \$1,224,364.33, and the amount now due the company on contracts and mortgages is \$1,787,508.90; in addition to which the sum of \$210,000 is held in trust to abide the decision of a suit brought by this company in the United States Circuit Court for the district of Iowa, against the Sioux City & St. Paul Co., which was by that court decided in this company's favor, and is now pending an appeal in the Supreme Court of the United States.

"There have been purchased and added to the equipment of the company during the year 100 locomotives; 6 sleeping, 6 dining and 46 passenger cars; 1,100 box, 1,000 stock and 100 flat cars.

The entire cost of the company's property, including rolling stock, depot grounds, cattle-yards, elevators, warehouses, docks, coal lands and other property, is represented by:

Common stock.....	\$27,904,261
Preferred stock.....	16,447,483
Total stock.....	\$44,351,744
Mortgage bonds, including all liens on purchased roads.....	80,635,500
Total stock and bonds.....	\$124,987,244

"On 4,520 miles of road this is at the rate of \$29,643 per mile.

"The preferred stock of the company was increased during the year \$2,046,000 by the conversion of mortgage bonds into preferred stock, as provided by the articles of association and the terms of the bonds. The bonds so converted were:

La Crosse Division, first mortgage.....	\$301,000
Iowa & Minnesota Division.....	230,000
Iowa & Dakota Division.....	17,000
Iowa & Dakota Extension.....	482,000
St. Paul (River) Division.....	193,000
Hastings & Dakota, old.....	8,000
Chicago & Milwaukee Division.....	101,000
Consolidated.....	655,000
Prairie du Chien Division.....	59,000
Total.....	\$2,046,000

"Thus the holders of all classes of bonds which are convertible into preferred stock availed themselves of the privilege.

"In accordance with authority given by the stockholders at the last annual meeting, the common stock was increased at \$7,500,000; of which \$7,101,948 was issued at par to the stockholders who subscribed for the same, one-half payable in cash and one-half charged to income account.

"The general condition of the property of the company has been greatly strengthened and improved in the past year, and it was never so good as it is now. The main lines of road, the equipment, terminal facilities and structures are equal to the best in the West.

"In the country traversed by the company's lines west of the Mississippi River, particularly in Dakota, there has been and there is now in progress an extraordinary development. The growing tide of immigration in that direction gives promise of a vastly increased business at an early day."



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EDITORIAL ANNOUNCEMENTS.

Passes.—All persons connected with this paper are forbidden to ask for passes under any circumstances, and we will be thankful to have any act of the kind reported to this office.

Addresses.—Business letters should be addressed and drafts made payable to THE RAILROAD GAZETTE. Communications for the attention of the Editors should be addressed EDITOR RAILROAD GAZETTE.

Contributions.—Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies, the letting progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subject pertaining to ALL DEPARTMENTS of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.

Advertisements.—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT IN THE ADVERTISING COLUMNS. We give in our editorial columns OUR OWN opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.

A STANDARD CAR TRUCK.

That it would be a very desirable thing to have one common pattern of car truck in general use for all freight cars and another for passenger cars most railroad managers are agreed. It is, however, more difficult to bring about the concurrence of opinion which will lead all, or many, railroad companies to agree upon any definite plans for a standard truck, than those who first take up the subject, or who give it but a slight amount of attention, are apt to suppose.

If there were certain unalterable conditions to be fulfilled, the problem would be much less difficult than it is. But owing to the great increase, during the past few years, of the loads carried by cars, a standard truck which would have been all right ten years ago would be unsuited for the service required now. When the Master Car-Builders' Association first adopted the standard axle, it was done with the hope that it was the first step toward the adoption of standard forms and sizes for all the other parts of cars. A standard journal-bearing, journal-box and pedestal followed, but thus far there has been no further advance; and it is now plain that if any action had heretofore been taken in that direction, it would now soon be necessary to abandon what might have been well suited to the requirements of ten or fifteen years ago.

Some other developments in the method of operating railroads have also indicated wherein a standard truck for the service of to-day should differ very materially from one that might have been all right when the master car-builders first commenced discussing the subject. It has now become apparent that the time is not far off when some form of continuous brakes will be used on many of the freight trains of the country. It is, therefore, essential that a standard truck for the future should be suited for the application of such brakes. In other words, the truck must be designed with reference to the use of brakes of that kind. It is essential, too, in order that such brakes may be certain and reliable in their action, that all the parts should be more carefully designed and substantially constructed, so as to reduce the chances of their failure to a minimum. In his talk to the Master Car-Builders' Club, a few weeks ago, Mr. Westinghouse called attention to the flimsy and unsubstantial manner of constructing many of the parts of brakes attached to trucks, and the observation of almost any observant person will have led him to notice the frequency with which broken parts of brake attachments are found along the lines of nearly all railroads. Accidents leading to such results are of course preventable, and it is only necessary to make the different parts of brakes strong enough for the ser-

vice they have to perform to diminish very greatly the frequency of such accidents.

The recent discussion at the meeting in Buffalo, on the strength of wheels, and the reports of their frequent failure, have indicated too, very clearly, the need of some improvement in their construction, and as stated in the letters of correspondents, published on another page, there must be some improvement either in the quality or the quantity of the material in them. It seems, too, as though there must be improvement in the design and methods of constructing wheels. Probably the solution of the difficulty will come by combining each of the three methods, that is, better material will be used, and more of it, and it will then be disposed in such a way as to secure the maximum amount of strength. Nearly every week the *Patent Office Gazette* contains reports of new inventions pertaining to the manufacture or construction of car wheels, and there can be no doubt that the distrust which must result from the publication of such reports as were made recently at the Buffalo meeting will lead inventors and manufacturers to devise improvements which will remedy, in part, at least, the evils thus indicated.

In the present aspect of the wheel question in this country it is a little surprising, though, that the use of wrought-iron wheels has not been more favorably regarded. They cannot be considered as an experiment, because they have been almost exclusively used on European railroads ever since the existence of the latter. The number in service would be counted by hundreds of thousands, and their manufacture has been developed into what is almost a distinct trade. Of late special machinery has been devised for their manufacture and is in successful use, which insures greater certainty and uniformity in the work produced. In saying this it is not in ignorance of the merits of the Allen paper, the Paige and other wheels, but the cost of these makes their use under freight equipment almost or entirely prohibitory. The aspect of the question to which we especially desire to call attention is that on a large proportion of the railroads of the world wrought-iron wheels are used almost exclusively, and have been for many years; that there is the most abundant experience to show their practicability and economy as compared with all other wheels excepting those made of chilled cast iron. There is probably a fortune in store for any one with the requisite energy and intelligence who will go into their manufacture in this country, with the most improved machinery and appliances. It must be remembered, too, that the introduction of steel tires constitutes a distinct epoch in the economy of wheels. On the Baltimore & Ohio Railroad, for example, it was found a number of years ago that chilled cast iron driving-wheel tires were more economical than wrought-iron tires; but when steel tires were introduced, they soon took the place of those made of cast iron, as it was found that those made of steel cost less for a given amount of service. Now it may be that the economy of wrought-iron wheels depends in the same way on the substitution of steel for wrought-iron tires. It must also be kept in mind that there has been a continuous reduction in the price of steel tires, and there has been no corresponding reduction in the price of the best cast iron for making chilled wheels. If this tendency continues, of course the point will soon be reached when steel-tired wheels will be cheaper than chilled wheels.

On the other hand, it must be admitted that those who have used steel-tired wheels have found that the cost resulting from sharp or worn flanges is greater than was at first anticipated. The fact that only a comparatively small proportion of wheels wear injuriously in the flange indicates, though, that the cause is due to some defect in the truck. A committee was appointed by the Master Car-Builders' Association and is expected to report on this subject at the next convention, and doubtless will be able to formulate with more or less distinctness, the causes which produce worn flanges. There can be little doubt that it will be found that in nearly or quite all cases it is due to inaccuracies in workmanship; such as the wheels not being set correctly on the axles, or that they are of unequal diameter, the truck frame not square, the axles not parallel, or the king-bolt out of centre. If, then, steel tires are found to be more liable to wear in the flange than chilled wheels, and if it can be shown that this is due to inaccuracies of workmanship, then it follows, that if steel-tired wheels are to be used on the standard truck of the future, it must be constructed with a much greater degree of precision and better workmanship than is now ordinarily employed on that part of the railroad equipment. Attention has been called before in these columns to the rudeness of construction of freight and even passenger car trucks.

Rough castings are fastened together and to unplaned bars, with a sort of vague hope that the many inaccuracies will about counteract each other, and that an aggregation of errors may result in something which will be correct.

The experiments which were reported to the Niagara meeting of the Master Car-Builders' Association on the strength of truck frames showed also that many of them have been very ignorantly or carelessly designed and proportioned, and that there was often an excess of material at one place and too little at another. The form of some of the parts is quite unsuited to resist the strains to which they are subjected. No competent bridge engineer, for example, would use a rectangular bar 1×3 in. in section to resist a compressive strain, nor would he drill out a third or a fourth of the section of a similar bar which was subjected to tension, without reinforcing it at the weakened point. These are obvious defects in design. There are others which are not so apparent which experiment would be quite certain to reveal. Before we reach even an approximation to perfection in the design of trucks, it will be necessary to adopt the same method that bridge engineers were obliged to pursue. In the beginning all their efforts were directed to the calculation of the separate members forming the bridge. Experience soon showed that even if these had the requisite strength, unless they were fastened together properly the bridge would fail at the fastenings. Then it was also found that even if the principal members and their fastenings were all strong enough, it was essential to prevent lateral deformation produced by wind pressure and other causes. Not only was it necessary that the two trusses should be held in straight lines, but it was also found that it was essential to hold them, the floor system, and the top or bottom bracing, as the case might be, in a rectangular position in relation to each other and prevent them from assuming a rhomboidal or skewed form in relation to each other. At present the investigations of the strength of truck frames have apparently not advanced further than the first two stages, and the experiments have been directed to ascertaining the strength of the different members and their attachments to resist vertical pressure alone. It would be interesting to see how much lateral pressure most of the truck frames would resist if it were applied at diagonal corners. Besides the direct strains enumerated, a truck is subjected to the influences of perpetual and severe concussions all the time it is in use. To resist these all the attachments must have large bearing surfaces, which must be so fitted that the parts exposed to wear will be in actual contact with each other. Of course skillful design will do much to provide for this kind of wear and tear, but direct observation on their effects is of still greater importance.

With reference to brake-gear, we have the advantage of the experience in the use of continuous brakes on passenger trains to guide us. Car-builders will be glad to learn that the problem of a design for a freight-car truck suited to the brake-gear has been submitted to Mr. Westinghouse, who has had perhaps more experience in that line than any one else. There is therefore good reason for believing that those who sooner or later will be called upon to decide upon a standard truck will have these features which are demanded by a continuous brake fully worked out.

It will not be easy, under existing circumstances, to decide on the size which an axle should have for the service demanded by the traffic of the present day. There can be no doubt though that the old superstition that friction is increased in proportion to the bearing surface, which had to be fought for so many years, is dying out, and that it will be much easier to-day to adopt a standard axle of adequate size than it was when the Master Car-Builders made a compromise between a journal 3½×6 in. and one 4×8 in. and adopted one 3½×7 in. It is a curious fact that among those who refused to adopt the Master Car-Builders' standard axle because it was too large, there are now a number who will not use it because they say it is too small.

Before any standard truck is adopted, however, it is very desirable that some one should invent a dust-guard for the axles which will accomplish its purpose better than those now in use. It would be difficult perhaps to find any device about a railroad which fulfills its purpose more imperfectly than a dust-guard—unless it be the ordinary ventilators of cars. Some entirely new departure here seems to be needed; some original invention is required to meet this case. It is an inviting field, and undoubtedly an invention which would accomplish the object of a dust-guard satisfactorily would be very valuable.

From what has been said it will thus be seen that

the range of inquiry necessary to design a standard truck which will fulfill the required conditions satisfactorily is a very wide one. Unfortunately many of the members of the Master Car-Builders' Association seem to have a very inadequate idea of the amount or kind of work which should be done before they are prepared to vote about it. The evolution of knowledge does not come by counting noses. If this article will make it a little more plain to the members of that Association what kind of preliminary work must be done before they will be prepared to recommend a standard truck, it will have accomplished the purpose for which it is written.

THE CHICAGO, MILWAUKEE & ST. PAUL.

Though the vast system of railroads of this company did not cease to grow in 1882, and indeed a large addition was made to it then, the increase was much less than in either of the four previous years, and we may expect hereafter to find that its operations as a carrying company will be more important than its work as a constructing company, which has hardly been the case of late years. Since 1878 its mileage has been trebled, and the addition to its capital in four years has been \$74,000,000, which is \$23,500,000 more than its gross earnings in that time. The additions to the property have been so great and made in so short a time that there has hardly been opportunity to judge of its capacity as it now exists. The lines are largely in new country, with undeveloped traffic. What they will amount to we cannot certainly say until the country has had time to develop; and it would seem the part of wisdom that time should be given for that before other great additions of such road should be made, these being in large part investments which at first can make but very slight return. That there has been a check to this rapid growth may be seen by the following statement of the miles added each year since 1878:

	1878.	1879.	1880.	1881.	1882.
Miles.....	136	692	1,544	442	303

Further, we believe the company has now very little construction work on hand. The only addition to the system proposed in the report is the completion of the James River Valley line in Dakota, which will require the construction of 120 miles; but it is not said that this work will be done this year. That time was needed for the traffic of the new roads to grow before adding to their number is indicated by the course of the gross and net earnings per mile of road, which for six years have been:

	1877.	1878.	1879.	1880.	1881.	1882.
Gross.....	\$5,784	\$5,492	\$5,016	\$4,777	\$4,445	\$4,746
Net.....	2,548	2,378	2,274	2,128	1,751	1,909

The proportion of roads with very light traffic has grown so fast as to reduce greatly the earnings per mile, though the very newness of the roads has probably made the working expenses abnormally small—smaller than they will be on the average—because very few renewals of the new rails, ties and rolling stock need be made in the first few years.

As we have no returns from the separate lines, we are not able to say definitely what has been the effect of the lines recently acquired on the profits of the company. Had we the net earnings of each of these lines, we still should not be able to measure their effect, though this would do much toward it. For the advantage of these lines may well consist more in their contributions of traffic to the old lines than in any profit made on them. For instance, the line in the James River Valley is 800 miles from Chicago and 715 from Milwaukee at Aberdeen, in the north, where the Hastings & Dakota line of the Milwaukee & St. Paul intersects it, and 653 miles from Chicago and 568 from Milwaukee at Mitchell, in the south, where the Iowa & Dakota Division intersects it. The shipment of produce made on this James River line, besides using part of that line, will nearly all pass over the older road thence to Lake Michigan. The shipments over the whole or part of the 228 miles of the Valley line (when completed) may add little to the profits of the company—nothing perhaps in the first few years; but over the 550 to 800 miles of the older road they may earn several times as much, and so more than pay interest on the cost of the road while it directly hardly earns its expenses. It is this assurance of a long haul over road already built which has made the railroad companies so eager to construct new lines in the unsettled country west of their old lines; a very small traffic would support them, and in course of time they were sure to have a large and profitable traffic. To occupy so promising a field was worth making some sacrifices and incurring some risks, and the companies have not hesitated, impelled by the certainty that if one did not occupy the territory another would, and so interpose a serious obstacle to their further development westward. In this work of pushing forward new lines, whose returns depended

upon the future growth of the country, the Chicago, Milwaukee & St. Paul has taken the lead. It has about 650 miles of road in Dakota, and a large part of that is in the part of the territory which has grown less rapidly than that on the Northern Pacific, and which, when the roads were built, was almost uninhabitable.

One of the longest of the newer lines of the company, however, the extension to Council Bluffs, will doubtless have from the beginning more than the average earnings per mile of the system, and to that extent tends to increase the average.

Though the increase in mileage last year was less than in 1881, the increase in capital was greater, and amounted to \$20,122,500. But \$7,500,000 of this was in common stock issued to the stockholders on payment of 50 per cent. of its face. The addition to the capital was at the rate of \$66,411 per mile of road added. This capital, however, was not all issued on account of road acquired within the year. By this addition the stock and bonds per mile of road, which were \$27,003 at the beginning of the year, were \$29,643 at its close. This latter, however, is an extremely small amount, less than on almost any other important Northern road. The company has, however, a very large floating debt. Every company as great as it must have a large amount due for current supplies and wages at the expiration of every month; but at the end of last year the Chicago, Milwaukee & St. Paul owed over \$7,000,000, only a small part of which could have been such accounts as those of debts accrued which there has not been time to pay, and which ordinarily, with a company which has not had any large amount of construction recently, is nearly covered by materials and cash on hand and accounts payable. There is nothing particularly objectionable in such a debt, but it needs to be noticed as a portion of what is properly the permanent capital of the company, and will probably be converted into bonds or stock, as indeed it is understood that part of it has been already. That it is a much larger amount than the ordinary necessary floating debt may be judged by the fact that the Chicago & Northwestern owed only about \$2,625,000 at the close of its last fiscal year under the heads which foot up \$7,160,000 on the Milwaukee & St. Paul. But we may allow that four or five millions more should be charged to the capital of the company, as that on which interest or dividends must be earned, and still have a very light capital account per mile.

For a company with over 4,500 miles of road in a growing country, with an interest charge of little more than \$1,200 per mile, there are great possibilities. Last year with net earnings of but \$1,909 per mile it was able to meet its fixed charges and pay 7 per cent. on both common and preferred stock. But these are very light net earnings. The Chicago & Northwestern last year made \$3,642 per mile, or nearly twice as much; and many much newer roads in poorer country report larger gross earnings per mile than the Milwaukee & St. Paul's \$4,746. Even the St. Paul & Omaha, which had only just begun to stand alone, earned \$4,714; the Northern Pacific, largely in a wilderness just opened to settlement, earned \$5,798; the St. Paul & Manitoba, in a country which but a few years ago had scarcely any inhabitants, and has now but two or three towns of more than 3,000 inhabitants, earned \$8,898. The two last named, it is true, are able to collect much higher rates; and it will probably be a long time before the Milwaukee & St. Paul earns per mile as much as the Northwestern; but as its stock amounts to a little less than \$10,000 per mile, an increase of but \$100 in profits permits an addition of 1 per cent. to the rate of dividend, and it is not at all sanguine to expect in course of time net earnings of \$3,000 per mile, and, should the territory on the new lines continue to grow as it is growing this spring, as much as \$2,500 a mile very soon.

We must, however, make some allowances in calculating the effect of an increase in net earnings on dividends.

In the first place, while there has been a great increase in the stock and bonds during the year, the mileage has increased but little. It will require \$5,598,578 to pay interest on the bonds outstanding at the beginning of this year, against \$4,786,054 accrued last year; and it will take \$3,104,622 to pay 7 per cent. on the stock, against \$2,461,042 divided last year. These payments were at the rate of \$1,687 per mile last year; this year to pay the \$8,703,200 of interest and dividends (not to speak of the interest that will probably have to be paid on four or five millions of floating debt) will require \$1,925 per mile—more than the total net earnings were last year. And further, while we may confidently expect a large increase in the gross earnings per mile in the next two or three years if the country in Northwestern Iowa, Western Minnesota and Dakota continues to grow as it is grow-

ing to-day, or even at a less rapid rate, this growth will probably be attended, then or shortly afterward, with a considerable further growth in the capital account; for it is by no miracle that this company has a very light capital account per mile. Its enormous mileage of new road is very cheaply built, and though entirely adequate for all that it has to do now, doubtless will require considerable additional expenditure to enable it to conduct economically a traffic such as that over the company's older Minnesota and Iowa lines, not to say its Wisconsin and Illinois lines. The company has itself furnished an instance very recently in the construction of the extension to Council Bluffs. This road was built through a well-peopled country, and it has to compete for through and local traffic with such solidly built and well equipped lines as the Northwestern and the Rock Island. It would not do to run the fast Chicago-Council Bluffs passenger train over a \$20,000-a-mile road. Just what the extension of 261 miles cost we do not know; but there are \$14,380,000 of bonds outstanding on the "Chicago & Pacific, Western Division," and the new road built is but 290 miles, we believe, though the mortgage covers, we think the old Sabula, Ackley & Dakota road, which makes about 90 miles of the line. This is at the rate of nearly \$50,000 per mile of new road. And even if we take the whole 488 miles from Chicago to Council Bluffs, this debt and the old \$3,000,000 mortgage on the eastern end make a funded debt of \$35,600 per mile. We may be sure that this is a very different road from the lines in Dakota on which \$15,000 a mile has been issued, and which cost little more than that, and that these cheap roads will require considerable additional capital when they have to carry a traffic anything like that of the Council Bluffs line. So by the time that the average net earnings per mile have risen to \$2,500 or \$3,000 we may be sure that the funded debt (if the capital is not provided by further issues of stock, which for some reasons is preferable) will amount to more than the \$1,298 per mile required for the bonds outstanding at the beginning of this year. The increase of \$600 or \$1,100 per mile will not all go to the stock, raising the dividends to 13 and 18 per cent.

Again, it is not probable that the net earnings will increase in proportion to gross earnings. Of late years the company has had so large a proportion of perfectly new road and rolling stock that its expenses for renewals have been below the average. None of the rails laid within the past few years of great addition to mileage can have worn out, and scarcely any of the ties required renewal. And we see the effect of this under the head of "renewals of track" in the statements of working expenses. With an average of 4.296 miles of road worked in 1882, the expenditures on this account were less in 1882 than in either of the five years next preceding, when there were 1,403, 1,539, 1,996, 3,775 and 3,830 miles, respectively, and the average expenditures per mile have been:

	1877.	1878.	1879.	1880.	1881.	1882.
\$277	\$145	\$140	\$102	\$80	\$52	

The expenditure last year would not put a single ton of rails in track, to say nothing of ties, and as there must be an average of about 100 tons of rails per mile, we would have an average life of 100 years, if this represented the average requirement for renewals. The expense on this account seems very light in the years when it was largest; but we should remember that on a very large proportion of this company's lines the traffic is actually very light, and the wear must be less than on most roads. Thus last year the train movement was equivalent to but 1,433 passenger trains and 3.7 freight trains each way daily over the entire mileage—say 5½ trains of both kinds; and the traffic to 64 passengers and 301½ tons of freight each way daily—a little more than a full passenger car and a fairly large full freight train would be able to take the whole. The Chicago & Northwestern had a train service equal to 1,726 passenger trains and 5.4 freight trains each way daily over its whole mileage, equal to 7½ trains of both kinds; and its traffic was equal to 86 passengers and 498 tons of freight each way daily—34 per cent. more passenger traffic and 65 per cent. more freight traffic in proportion to mileage than the Milwaukee & St. Paul.

In repairs of cars also we see the effect of the great additions to the stock made in recent years. There were 4,980 in 1877, 7,532 in 1879, and 18,985 in 1882. The average expenditure for repairs per car has been:

	1877.	1878.	1879.	1880.	1881.	1882.
\$74.00	\$81.70	\$62.63	\$46.00	\$40.85	\$55.00	

Probably the average expense will not be less than \$70 per car, and if so the difference last year was equal to \$63 per mile, and as the new stock grows older the normal renewals will have to be made.

But while renewals will cost more as the roads grow

older, an increase in traffic may make it possible to work them more economically in other respects. A very considerable increase of traffic, for instance, may be carried without increasing the train service, as the average train-loads on some of the lines are very small indeed. But after making all allowances for increase in fixed charges, larger expenditures for renewals, etc., it must be confessed that the company has brilliant prospects. It has taken what seems to us great risks in investing tens of millions in lines whose returns depended entirely upon the growth of an almost uninhabited country; though it was certain that eventually this country would be occupied and afford a profitable traffic, yet it could not be certain that it would be filled with settlers immediately, and postponement of the occupation for a few years would have made these lines a burden upon the old system instead of a source of profit. But so far everything has turned out favorably. There was large immigration last year, though less than to the country further north, and this year the immigration to the country on the lines of this and other companies south of the Northern Pacific appears to be much larger than ever before, and this is all that is needed to make them profitable. A good crop this year and there will remain scarcely any doubt that they will become immediately profitable, and then the gains to the stockholders of the company will be in proportion to the risks which were incurred in building such a vast system of roads in the wilderness.

Not a great deal can be expected from these lines during the current year, however, except from the carriage of immigrants and their supplies. But the new Council Bluffs line should add materially to the earnings this year, and the rapid growth of the Northwest will give much traffic to the system as a whole, without regard to the crops of the year.

Crop Prospects.

There is the usual disposition to be "too previous" in estimating the crop of wheat. The most that can be done now is to ascertain the acreage and the actual condition of the winter wheat, and the acreage sown or which farmers are preparing to sow of spring wheat. "Estimates" of the spring wheat crop, when part of it is not sown, might about as well have been made last year as this. And winter wheat may improve greatly from its present condition, or may almost utterly fail, in the time between now and harvest. It is all a calculation of chances, from which, week by week, uncertainties are transferred into certainties.

The condition of wheat as affected by the winter is the most important single fact in the history of the crop until just before harvest. The acreage is reported to be 1 per cent. more than last year; the condition on the 1st of April was reported by the Department of Agriculture as 80, against 104 last year, and 85 in 1881. It must not be inferred, however, that the crop this year will be in the same proportion. In 1881 the crop grew much worse after April 1, and somewhat also last year, for the average yield was not extraordinary. It has improved so far this year. Considerable damage by winter killing is reported in the Mississippi valley, but the amount is not definitely ascertained. Winter killing, beyond a certain amount, is a damage that cannot be remedied; there are so many less wheat plants, and however they thrive, they cannot produce as much as a larger number of plants which should thrive equally well. But the winter-killing that only thins out a little the plants may do little harm, if there is enough left and the weather thereafter is favorable for stooling sufficient to occupy the space. And when the killing is so great as to leave no hope for a remunerative crop, the ground is likely to be plowed up for a spring-planted crop. There is, then, a loss to the farmer of a dollar's worth of plowing and harrowing, and two dollars' worth of seed; but there may be something produced fully equivalent to the wheat. But with a prospect of no more than 8 or 10 bushels per acre the crop will be likely to remain. What is known now seems to indicate that there cannot possibly be an average yield equal to the largest in Ohio, Kentucky, Indiana, Illinois, Missouri and Kansas, which, with California, are the chief producers of winter wheat. But with favorable weather hereafter the yield may be good. In California the condition of things has been revolutionized since the report of the Department of Agriculture was made up, by the abundant rains a little later than they were expected. But some of the newspapers are exaggerating the effect of these rains, and estimating now a yield as large as that of 1880, which was the largest ever known. But for the largest yield in California there is required favorable weather at the time of sowing and through the winter, as well as in the spring. The season was not favorable to the growth of the plant last winter; and there was so little rain that it threatened to die of drought, when the recent abundant rains came, which guarantees that the plants that have grown will produce a fair yield. The acreage, by the Department of Agriculture, is estimated as 10 per cent. more than last year—an enormous increase to be effected in a single year—and the late rains make almost certain a yield per acre nearly as large as last year's, which was given by the Department of Agriculture as 13 bushels per acre, and 34,500,000 bushels for the state. With this yield the acreage this year will produce about 38,000,000 bushels. With the yield per acre of 1880, it would give

about 48,000,000 bushels; but there is no reason to expect that, and it is almost impossible. The Central and Southern Pacific are the only carriers that get any great gain from a heavy California wheat crop. That state is as much a competitor of the Northwest and the carriers thence to the seaboard as Russia and Australia. Its product is not important in absolute amount, but by far the larger part of it is exported.

The transfer from wheat to other crops in Southern Minnesota continues, and an estimate is made that 7 per cent. less wheat will be sown there this year than last, and that in spite of a large increase in the newer western and north-western counties, there will be a decrease in the wheat acreage of the state this year, which is altogether a favorable feature when, as in this case, it gives way to more profitable crops.

Some one has estimated that there will be 1,600,000 acres of wheat sown in Dakota this year, against 850,000 last year. It may seem a tremendous change to increase the acreage nearly 90 per cent. in one year; but it must be remembered that there has been a great growth of population in northern Dakota; and that in that part of the state little but wheat is raised, especially by new settlers. Now allowing but 20 acres each to every new farm, it would require but 37,500 new farms to give the additional 750,000 acres of wheat. That as many as that number were opened last year would not be surprising. On the other hand, in the southern part of the state, which has been settled longest, the tendency is to abandon wheat-growing and raise more corn, hogs and cattle.

We see no estimates of the acreage to be sown in Manitoba. In view of the enormous immigration thither, last year, it must be considerable, as there, too, little but wheat is grown. Heretofore the whole product has had to be marketed by the railroads through this country, so that to a number of carriers the product of Manitoba was as important as that of any part of this country. This year, which will be the first year that has a large surplus to export, it will have an outlet over the Canadian Pacific to Lake Superior, and it will be to the advantage of the Canadian Pacific, on whose line most of the settlements are, to have the grain take this route, giving it a haul from Winnipeg of 425 miles to Thunder Bay, instead of one of 68 miles to the junction with the St. Paul & Manitoba road on the border. It is probable, however, that a very large part of the Manitoba surplus will continue to go to Minneapolis to be ground, and after lake navigation closes that will be the only outlet for it, so that we may still count the Manitoba product as freight for American carriers.

The New York Tribune has published a great mass of reports concerning the acreage and condition of wheat in the chief producing states, which are, however, altogether insufficient to base an estimate on, while the conclusions drawn from the reports for separate states are often not warranted by the reports. "A brilliant prospect of a great crop" is reported for Dakota as a whole, while the reports for the separate localities only show that sowing had begun, and that in most counties reporting an increase in acreage of 10 to 25 per cent. was expected, and in a single instance an increase of 100 per cent. There is nothing to prevent Dakota's turning out the best crop in its history—or the worst. Of a crop but half sown, no "prospect" can be reported but acreage. For Illinois the Tribune reports "the condition fair, and growing fairer;" but immediately underneath the condition is reported as 30 per cent. lower than last year at this time. It is winter wheat that is reported upon there. The quantity of spring wheat grown is unimportant. In Indiana an improvement is reported in the first half of April, which seems well founded. The Agricultural Department reported the condition as 75 April 1, and the acreage 1 per cent. less than last year. The Tribune's reports from separate counties most of them indicate a condition not higher than this, and a lower condition in as many counties as a higher one; but many reports say the condition is improving. In Ohio the Tribune reports the prospect as for a crop "20 to 33 per cent. below the crop of last year." The Department of Agriculture reported the condition as 70 and the acreage 1 per cent. less than last year April 1.

In Missouri the Tribune reports an increase in acreage of winter wheat of "10 to 15 per cent.," but in its county reports more report a decrease than an increase. The Department of Agriculture, which has a vastly larger number of reports to base estimates on, and has the advantage of definite statements of acreage in each county in previous years, reported the acreage as 1 per cent. less than last year, and its reports of acreage of this crop, sown months ago, ought to be pretty nearly correct. It reported the condition April 1 as 83, and the Tribune reports do not show any improvement or injury since.

In Kansas the Department reported the average condition as 70 April 1, which is much less favorable than other reports had been. The reports from separate counties in the Tribune make the condition as good as last year in perhaps half the counties, and very poor in most of the others. There is scarcely any other state in which the yield fluctuates so greatly. It was altogether unprecedented last year. This indicates that the Department report was not so far out of the way. It reported the acreage as 5 per cent. less than last year.

In Kentucky, the department reported the condition as 80 April 1, with the same acreage as last year. The Tribune reports considerable improvement since.

These, with California and Michigan, are the states which produce winter wheat for export in considerable quantities. The Department reports the acreage as 1 per cent. less in Michigan and 10 per cent. more in California than last year,

and the condition April 1 as 93 in Michigan and 62 in California. The revolution in the condition in California by the abundant rains we have spoken of; the Tribune does not report from either of these states.

It appears, then, that the condition of winter wheat in none of these states is as good as last year at this time; and in most is far below. It will be possible for it to grow better as well as worse; but of course the probabilities are that starting with a worse condition, it will not reach an equal (almost uniformly good) condition.

So far as spring wheat is concerned, reports of anything but acreage have very little value at this season and reports of acreage in many parts must be rather of what it is intended to do than of what is done.

The Department of Agriculture has not made any report as to this crop as yet, for obvious reasons. The Tribune reports that in Wisconsin there is more likely to be a decrease than an increase in the area sown, and confirms the statement that a considerable decrease is expected in Minnesota south of the Manitoba road, which includes probably seven-eighth of the total area under cultivation.

In Dakota the estimates of increase in acreage vary greatly and seem very crude, but a very large increase is certain. No report is made for spring wheat in Iowa. There is information as to winter wheat, but winter wheat there, as in the northern third of Illinois, in Wisconsin and in Minnesota, is not cultivated to sufficient extent to make its prospects of importance.

The Tribune reports a prospect of an increased acreage of spring wheat in Nebraska, where a very little winter wheat is raised, which is not looking well.

Good farming weather for a few weeks will now have a great effect on the production of the country. The spring has been unusually late (though much earlier than in 1881), and it will require great activity on the part of the farmers to do their plowing, sowing and planting early enough. If they are late, the chances of the crops are less. If anything happens, the crop cannot be replaced. Bad weather materially reduces the amount of time the farmer can work in the fields, as well as the starting and growth of the crops he sows. This is not sufficiently considered, it being apparently assumed that the farmers somehow manage to plow, seed and cultivate all their land whatever the weather, when in some years there is not half as much time in which this work can be done as in others, and farmers cannot double their working force at will.

March Accidents.

Our record of train accidents in March, given in full on another page, shows for that month a total of 142 accidents, in which 13 persons were killed and 187 injured. While the record is much better than that of February, it still makes a very unfavorable comparison with previous month and with the same month in previous years.

As compared with March, 1882, there was an increase of 43 accidents, a decrease of 16 in the number killed, and an increase of 36 in the number of persons injured.

Included in these accidents are 47 collisions, in which 5 persons were killed and 30 injured; 81 derailments, in which 5 persons were killed and 105 injured, and 11 other accidents, in which 3 persons were killed and 2 injured. Four of the killed and 24 of the injured in the collisions were employes, as were all of the killed and 46 of the injured in the derailments, and all of the killed and injured in the other accidents. The only person killed who was not an employé was a tramp who was stealing a ride, being thus of a class who voluntarily expose themselves to greater risk than passengers.

These accidents may be classed as to their nature and causes as follows:

COLLISIONS:	
Rear collisions.....	36
Butting collisions.....	8
Crossing collisions.....	3
— 47	
DERAILMENTS:	
Broken rail.....	11
Broken switch-rod.....	1
Broken bridge.....	1
Spreading of rails.....	8
Broken wheel.....	7
Broken axle.....	4
Broken truck.....	3
Land-slide.....	1
Snow.....	1
Accidental obstruction.....	4
Cattle on track.....	1
Misplaced switch.....	10
Unexplained.....	32
— 84	
Boiler explosion.....	2
Broken connecting-rod.....	5
Broken draw-bar not causing derailment.....	1
Broken wheel not causing derailment.....	1
Cars burned while running.....	2
— 12	
Total.....	142

No less than nine collisions resulted from the breaking of freight trains in two. There were two collisions due to misplaced switches, and one each from snow, from failure to use signals, from cars left standing on the main track, and from carelessness in running cars on a siding and leaving them projecting over on the main track. The number of rear collisions due to delay in sending back signals is left to conjecture, but there is almost a certainty that several were due to carelessness in not keeping a proper distance between freight trains running as extras and following other trains.

A general classification of these accidents may be made as follows:

	Collisions.	Derailment.	Others.	Total.
Defects of road.....	21	21	0	42
Defects of equipment.....	9	17	0	26
Negligence in operating.....	37	10	0	47
Unforeseen obstructions.....	1	4	2	7
Maliciously caused.....
Unexplained.....	32	32
Total.....	47	84	11	142

Negligence in operating was thus the cause of 33.1 per cent. of the whole number of accidents, while some of those attributed to defects of road and equipment might probably have been prevented by more careful inspection. A considerable part of the unexplained derailments are probably due to defects of the road.

A division according to classes of trains and accidents is as follows:

Accidents:	Collisions.	Deraillments.	Other.	Total.
To passenger trains.....	1	20	5	32
To a pass. and a freight.....	0	0	0	0
To freight trains.....	40	58	6	104
Total.....	47	84	11	142
Casualties:				
Killed by.....	5	5	3	13
Injured by.....	30	105	2	137
Total.....	35	110	5	150

This shows accidents occurring to a total of 189 trains, of which 39, or 20.6 per cent. of the total number, were passenger trains, and 150, or 79.4 per cent., were freight trains. A complete official report of all accidents would probably greatly increase the number and proportion of freight trains. Of the total number of accidents 91 happened in daylight, 48 at night, and in three cases the time is not definitely given.

The persons killed and injured are divided as follows:

	Killed.	Injured.	Total.
Employees.....	12	72	84
Passengers.....	1	65	66
Total.....	13	137	150
Percent of employees.....	92.3	52.6	56.0

The number of killed was very small when compared with the number of accidents. The proportion of passengers among the injured was increased by a single accident in which a large number of persons were hurt.

In 11 of these accidents the death of one or more persons was caused; in 36 others there was injury, but not death, leaving 95, or 63.9 per cent. of the whole number, in which no serious injury to persons is reported.

The month, while not quite so bad as February, was still a very unfavorable month for railroads. The weather was generally cold, the severity of winter continuing well through its first half, while there were many storms both of snow and rain. It was, however, generally free from the floods which marked February so disastrously, but the other troubles resulting from the weather are seen in the number of broken rails, broken wheels and similar accidents.

The month was, however, marked by an increase in accidents of management. The number of collisions was not great—about one-third of all the accidents—but there were no less than 12 misplaced switch accidents and three crossing collisions, the latter being almost certainly the result of the absence of proper signals or negligence in their use.

Of the two boiler explosions, as is almost always the case, it has been impossible to secure any account on which could be based any theory as to the causes. The number of broken parallel rods is considerable, and it would be well for master mechanics to consider carefully the causes of these accidents. Master car-builders also have matter for consideration in the number of accidents resulting from the breaking of couplings on freight trains. Passenger trains are almost entirely exempt from this class of accidents, and there is no reason why freight trains should suffer so often.

The accidents for the first quarter of the year for four years have been as follows:

	1883.	1882.	1881.	1880.
Accidents.....	494	324	485	191
Killed.....	129	93	95	36
Injured.....	522	368	612	132

This comparison shows in a very striking way the difference between a mild and a severe winter. Part of the great increase in accidents is due to other causes, to which reference has been made from time to time, but the marked difference between the present year and 1882, and the slight one between this year and 1881, are chiefly due to the weather of the winters in those years.

For the year ending with March the record is as follows:

	Accidents.	Killed.	Injured.
April.....	81	13	61
May.....	94	24	86
June.....	72	35	193
July.....	92	18	56
August.....	139	46	218
September.....	153	34	136
October.....	136	47	132
November.....	125	38	129
December.....	148	29	209
January.....	168	55	189
February.....	184	61	186
March.....	142	13	137
Total.....	1,534	416	1,742
Total same month, 1881-82.....	1,297	412	1,353
" " " 1880-81.....	1,372	374	1,652
" " " 1879-80.....	839	173	626

The yearly average for the four years was 1,261 accidents, 343 killed, and 1,343 injured.

The number of accidents in March was exceeded in four other months of the year, but the number of killed was smaller than in any other month, while the number of injured was exceeded in four other months.

The averages per day for the month were 4.58 accidents, 0.42 killed and 0.42 injured; for the year they were 4.20 accidents, 1.14 killed and 4.77 injured.

The average casualties per accident were, for the month, 0.092 killed and 0.965 injured; for the year, 0.271 killed and 1.136 injured.

The averages per month for the year were 128 accidents, 35 killed and 145 injured. March was above the average in accidents, but below it in deaths and injuries.

Record of New Railroad Construction.

This number of the Railroad Gazette contains information of the laying of track on new railroads as follows:

Carson & Colorado.—Track laid to a point nine miles

southward from Bishop Creek, Cal., an extension of 34 miles. Gauge, 3 ft.

Gainesville & Dahlonga.—Track laid from Gainesville, Ga., northwest 5 miles. Gauge, 3 ft.

Gainesville, Jefferson & Southern.—The Jefferson Branch is extended from South Oconee, Ga., east to Jefferson, 2 miles. Gauge, 3 ft.

Northern Pacific.—Extended from Bozeman, Mon., west to the main crossing of the Gallatin, 21 miles.

This is a total of 62 miles of new railroad, making 973 miles thus far this year, against 1,876 miles reported at the corresponding time in 1882, 906 miles in 1881, 1,096 miles in 1880, 391 miles in 1879, 267 miles in 1878, and 269 miles in 1877.

ERIE EARNINGS AND EXPENSES have now been reported for the month of February and the five months of its fiscal year then ending. The returns for February are not favorable and decidedly worse than in any other of the five months of the fiscal year. Gross and net earnings and working expenses in February in each of the six years since the reorganization have been:

Year.	Gross earnings.	Expenses.	Net earnings.
1878.....	\$1,121,412	\$804,847	\$316,565
1879.....	1,207,391	894,076	313,315
1880.....	1,252,217	900,633	351,584
1881.....	1,425,765	1,059,160	366,605
1882.....	1,304,757	1,013,057	291,700
1883.....	1,280,615	1,040,815	239,800

Thus, this year the gross earnings in February were 1.6 per cent. less than last year, and 10 per cent. less than in 1881, but larger than in any earlier year. The working expenses were 3.6 per cent. more than last year and 1 per cent. less than in 1881, and larger than in any earlier year. The net earnings were \$57,900 (19½ per cent.) less than last year, \$132,805 (36 per cent.) less than in 1881, and less also than in any other year of the six.

Last year through traffic was pretty large in February, but not so large as in January, and rates were very low. But the gross earnings that year were nearly as large in February as in January; this year through traffic was generally pretty good on the trunk lines both months, and rates very much better than last year; but the Erie's gross earnings were \$41,254 (16 per cent.) less in February than in January, and its net earnings 23½ per cent. less. The course of gross earnings from January to February on the Pennsylvania Railroad last year was nearly the same as on the Erie; that is, they were but little less in February than in January; but this year the Pennsylvania's earnings were but 5½ per cent. less in February, while the Erie's were 16½ per cent. less. Thus there was probably some special cause affecting the Erie's earnings that month, though for most roads February was less favorable than January. Comparing with last year the contrast with the Pennsylvania is still greater. The latter in February earned 12 per cent. more, the Erie 19½ per cent. less than last year; and in net earnings, while the Erie lost 23½ per cent., the Pennsylvania gained 23½ per cent. What was especially unfavorable to the Erie in February we do not know. It is somewhat surprising to find its net earnings less than in any previous February.

For the five months ending with February the earnings and expenses have been for the six years since the reorganization:

Year.	Gross earnings.	Expenses.	Net earnings.
1877-78.....	\$6,996,849	\$4,661,893	\$2,334,956
1878-79.....	6,415,242	4,513,491	1,901,751
1879-80.....	7,176,375	4,860,287	2,316,088
1880-81.....	8,296,838	5,491,892	2,804,946
1881-82.....	7,725,297	5,694,172	2,031,125
1882-83.....	8,137,732	5,757,071	2,380,661

Thus the gross earnings this year have been \$412,425 (5½ per cent.) the working expenses \$153,899 (2½ per cent.) and the net earnings \$258,525 (12½ per cent.) more than last year; but compared with 1880-81 there is a decrease of \$161,116 (2 per cent.) in gross earnings, and of \$420,696 (15 per cent.) in net earnings, and the net earnings are but a trifle greater than in 1880 or even in 1878, the first year of the reorganization.

For the seven months following February which complete the fiscal year the Erie's earnings and expenses in the last two years were:

	1882.	1881.	Inc. or Dec. P. c.
Gross earnings.....	\$12,250,477	\$12,422,368	Dec. 1.4
Expenses.....	7,483,022	7,764,338	Dec. 280.416 3.6

Net earnings..... \$4,768,555 \$4,658,030 Inc. \$108,525 2.3

For the whole fiscal year 1881-1882 the gross earnings were \$735,432 and the net earnings \$571,716 less than the year before. Probably the first four of these months were unfavorable last year, but the other three should have been favorable, and while until July we should expect gains in gross earnings (perhaps not in net), after that month the road may do very well without doing better than last year, and at least we cannot foresee how traffic will be then, as the harvest will affect it greatly. The Lackawanna road will affect it hereafter more than heretofore, doubtless, as it has not yet begun to run through passenger trains; and the total gain from February to the end of the fiscal year may not be considerable.

The course of earnings from month to month in the last two fiscal years has been:

	Gross earnings.	Net earnings.
October.....	\$1,819,010	\$1,814,096
November.....	1,818,824	1,715,469
December.....	1,691,404	1,571,208
January.....	1,524,869	1,318,966
February.....	1,283,615	1,304,757

February is usually the month of the smallest earnings, but the falling off from previous months is exceptionally large this year; in March, on the other hand, earnings are sometimes the largest, and they have been so on an unusually large number of roads this year, while it was exceptionally bad last year. We may therefore confidently expect that the next Erie statement will show a large gain.

PENNSYLVANIA RAILROAD EARNINGS AND EXPENSES have now been reported for the month of March, and show compared with last year, for all lines east of Pittsburgh and Erie, an increase of \$277,087 (7.1 per cent.) in gross earnings, but also an increase of \$237,462 (10 per cent.) in working expenses, leaving the increase in net earnings but \$39,625 or 2.8 per cent., which is the smallest increase made in any month since December (when there was a slight decrease). This is due to the great increase in working expenses, which were larger than in any previous year in the history of the road except in November and December of last year, and in May and June of 1873. The gross earnings were the largest since November, but not larger than was to be expected. Indeed, if a large proportion of this road's earnings was from grain, as is the case with the lines from Chicago east and the Western roads generally, we should expect a larger increase than \$277,000 over the earnings in March last year, when east-bound traffic was extremely light and all through rates much lower than this year. That when through traffic is so improved the gain should be no larger indicates that there cannot have been much gain in the local traffic.

The gross and net earnings and working expenses in March for the last eleven years have been:

Year.	Gross earnings.	Expenses.	Net earnings.
1873.....	\$3,305,901	\$2,369,678	\$936,223
1874.....	2,961,575	2,000,021	961,554
1875.....	2,628,411	1,691,616	936,795
1876.....	2,063,867	2,053,232	690,675
1877.....	2,410,804	1,517,168	893,636
1878.....	2,499,286	1,531,448	967,838
1879.....	2,603,067	1,615,844	987,223
1880.....	3,278,186	1,766,938	1,511,249
1881.....	3,844,304	2,045,078	1,799,226
1882.....	3,912,294	2,456,461	1,455,833
1883.....	4,189,380	2,733,903	1,455,477

We see thus that while the gross earnings this year were larger than ever before, and as much as 28 per cent. (\$911,200) more than in 1880, the expenses increased so much that the net earnings, though a trifle greater than last year, were \$343,800 (19 per cent.) less than in 1881, and even \$55,800 (3½ per cent.) less than in 1880, there having been an increase in expenses of no less than \$967,000, or 58 per cent., since then.

The lines west of Pittsburgh and Erie in March earned a surplus over all liabilities of \$225,951, against \$45,163 last year, and a deficit of \$164,776 last February, the month of floods. As the gross earnings of these lines average \$2,500,000, very slight changes in earnings and expenses will produce such results. But March was for grain-carrying roads an unusually favorable month. It was probably more so for the more northern lines, however, than for those as far south as Columbus, Indianapolis, and St. Louis, among which are a large proportion of the Pennsylvania's western lines; while some of those further north are affected greatly by the coal, coke and iron traffic, which could hardly have been as active this year as last.

For the three months ending with March, on the lines east of Pittsburgh and Erie, there was an increase of \$1,238,587 (11½ per cent.) in gross earnings, of \$345,098 (7½ per cent.) in working expenses, and of \$893,489 (19½ per cent.) in net earnings. For seven successive years the earnings and expenses in this first quarter of the year have been:

Year.	Gross earnings.	Expenses.	Net earnings.
1877.....	\$6,990,070	\$4,635,058	\$2,355,012
1878.....	7,058,492	4,467,754	2,590,738
1879.....	7,684,532	4,504,961	3,179,571
1880.....	9,306,314	5,196,786	4,109,528
1881.....	10,159,134	5,965,143	4,193,991
1882.....	10,592,366	7,022,877	3,569,489
1883.....	11,890,953	7,567,975	4,322,978

The gross earnings, expenses and net earnings this year are all larger than ever before; but while the net earnings are 19½ per cent. more than last year, they are but 2.4 per cent. more than in 1881, and but 3½ per cent. more than in 1880. The gain in net earnings since 1880 is but \$153,450, while the gain in gross earnings has been no less than \$2,524,639, the increase in working expenses having been \$2,371,189, or nearly 46 per cent. Something of this vast increase in cost has been owing doubtless to an increase in the cost of the elements of expenses—materials and labor; but a very large part of it is doubtless due to a great increase in that part of the traffic which yields but a very small profit.

For these three months the lines west of Pittsburgh and Erie earned a surplus over all liabilities of \$236,156, against a deficit of \$12,285 in the corresponding period of last year. This result is, however, much less favorable than in 1880 and 1881, the surplus or deficit of this western system for the three months, since 1878, having been:

	1879.	1880.	1881.	1882.	1883.
	\$149,459	\$1,049,129	\$1,070,718	\$12,285*	\$236,156

* Deficit.

The profits of this system, added to the net earnings of the system east of Pittsburgh worked directly, make the profits of both systems together \$941,921 more than last year, which is about \$1.10 per \$100 of stock outstanding; they are, however, but \$76,285 more than in 1881, when the stock was much less than now.

REDUCTION OF STAFF OF OFFICERS BY CONSOLIDATION

is often given as one of the "economies" which results from the union of roads. But beyond a certain point we venture to say that the union of railroads increases the official staff required to work them properly. There is no doubt that there often is a reduction in the number of officers, but there also is no doubt that consolidated systems are sometimes inadequately officered, and suffer accordingly. Let any officer of a road consider what he has to do, and how much his duties would be increased if his department were extended over another road. It is true that there are certain duties and responsibilities exercised by a general officer which

cannot well be divided between two men. But most of the work has to be done by some one just the same after as before a road has been merged into another system. Not only has that to be done, but something more—namely, the co-ordination of the different parts of what are now one system. A road a hundred miles long requires but one superintendent. Add another road of the same length and a superintendent and an assistant superintendent may work the road as two divisions; add one or two more divisions and there is required besides a division superintendent for each division a general superintendent to co-ordinate their efforts. If there is a system with 15 or 20 divisions, the work of supervising so many division superintendents is too much for one man, and we will probably have two general superintendents and a general manager over them both. If all the railroads in the country were under one authority, we should probably have a great many general managers, taking orders themselves from some central authority.

The army organization shows the same necessity of an increase in higher officers as the army increases. If the force consists of but a hundred men, a captain and two or three lieutenants suffice. With eight or ten or twelve companies, we have twelve times as many of these officers, and in addition a colonel, lieutenant-colonel and a major, besides a regimental staff. Put several regiments together and we have just as many regimental officers, and in addition a brigade commander with his staff; with several brigades, a division commander, with several divisions a corps commander, and with several corps an army commander. When two brigades unite no one thinks of dismissing one brigade commander and putting the other in command of the two.

It is true that there are certain qualities required of a captain commanding an isolated company, and of a superintendent of an independent 100 miles of railroad, not required, or not in so high a degree, of the captain of one of ten companies united in a regiment or of the superintendent of one of ten divisions of 100 miles united under a general superintendent. General policies are decided for the latter; the former must decide for himself in great things as well as in carrying out details. But the benefit of union, in an army or a railroad system, is in securing the co-operation of several parts, and this requires work of a high character, for which there is no room when the parts do not co-operate.

No one man can conduct wisely the affairs, say of the traffic department, of a system of four or five thousand miles of railroad unless he is aided by assistants who know thoroughly each different part of the field. With their help he may do wonders with what was before a mass of contending lines. Without it, he must grope in the dark.

It is easy to be too economical with brains; and this is a fault committed by different companies in different ways. Some take great pains and spare no expense to secure what they consider the ablest men; but when they have got them they so limit the force of assistants that they could keep busy to advantage that their ten-thousand-dollar men are three-fourths of the time doing the work of two-thousand-dollar men, and so the greater part of their qualities go to waste. The head of a department should have plenty of time to think. It is a shameful waste to have him doing the work of a clerk or a beginner; he should be making more efficient the services of the hundreds of cheaper men under him, by which he may save many times his own high salary. Bright young men, though not ripe enough in judgment to be given independent authority, may be of enormous value as a staff of an able head of a department, multiplying greatly the work which he can do; and meanwhile they are in training for more independent work.

CHICAGO THROUGH SHIPMENTS EASTWARD in the month of March, for five successive years, have been, in tons:

1879.	1880.	1881.	1882.	1883.
258,458	318,983	212,021	179,145	287,240

Thus the shipments this year were larger than in any previous March except in 1880. They were exceeded also in April, 1879, and in January, 1882, but only in these three months. They were 108,095 tons (60½ per cent.) more than last year in March, 35½ per cent. more than in 1881, 10 per cent. less than in 1880, and 11¼ per cent. more than in 1879.

For the three months ending with March the shipments have been:

	1879.	1880.	1881.	1882.	1883.
Jan.....	192,512	163,378	263,872	321,148	257,063
Feb.....	198,541	166,541	204,331	225,816	223,446
March.....	258,458	318,983	212,021	179,145	287,240
3 months..	649,511	648,902	680,224	726,127	767,779

Last year the shipments were extraordinary in January, by reason of very low rates, but they fell off immediately and became unusually small in March, and after that month continued lighter than in either of the three previous years until September. This year the shipments were large each month, and largest in March. For the three months they are larger this year than ever before—5¼ per cent. more than last year, 13 per cent. more than in 1881, and 18 per cent. more than in 1880 or 1879.

The rates during this quarter were irregular and low, varying from 25 down to 17½ cents per 100 lbs. to New York, in 1879; they were 40 cents in January and February, and 35 in March, 1880; 35 in January and March and 40 in February in 1881 (with some cutting of rates, which did not affect a large proportion of the traffic, however); averaging probably not more than 12½ cents in January, 15 in February and 17½ in March last year, and very well maintained at 30 cents this year in all three of the months. Applying these rates, if all the shipments had gone through

to New York, the earnings from them would have been about as follows during the quarter.

1879.	1880.	1881.	1882.	1883.
\$2,706,000	\$4,875,000	\$5,014,000	\$2,192,000	\$4,600,000

The actual earnings must have been something less than this, as not all the shipments went as far as New York, but the earnings must have been about in proportion to these figures. These higher rates and larger shipments together made the earnings twice as great this year as last; but higher rates made them larger in 1880 and 1881, in spite of smaller shipments.

The distribution of the shipments of the three months, that is, the percentage carried by each road, has been:

	Lake						
C. & G. T.	11.7	Mich. Cen.	26.0	Lake Shore.	21.0	Ft. Wayne.	21.0
						P. C. & St. L.	12.3
						B. & O.	8.0

Thus the two Vanderbilt roads together carried 47 per cent. of the whole, instead of the 45½ per cent. to which they are entitled in the pool; and the two Pennsylvania roads carried 33.3 per cent., while entitled to 35½—a close approximation.

The shipments for the last ten days of March were 76,596 tons, and at the rate of 57,447 tons per week. For this and the two following weeks they compare as follows with the three previous years:

Week to	1880.	1881.	1882.	1883.
March 31.....	65,626	53,838	32,447	57,447
April 7.....	50,429	53,020	38,988	36,271
" 14.....	34,560	73,362	33,232	35,728

Thus the shipments in the last week of March were 25,000 tons (77 per cent.) more than last year, but less than in 1880. For the first week of April they were less than last year even, and about a third less than in 1880 and 1881, and in the second week of April they were but little more than last year, and not half as great as in 1881. But it will be noticed that there was a sudden and great decrease from the first to the second week in April in 1880, just as there was this year from the last week of March to the first week of April, and doubtless from similar causes.

The percentage carried by each road in each of these three weeks was:

Week to	C. & G. T.	Mich.	Lake	Ft.	P. C.	B. & O.
March 31.....	14.1	23.7	17.8	23.6	16.7	4.1
April 7.....	19.5	26.5	14.8	23.5	11.4	4.3
" 14.....	17.7	18.1	14.7	33.4	11.2	4.9

The Lake Shore in all these weeks falls far behind the 21¼ per cent. to which it is entitled, the Baltimore & Ohio is also much behind its 8 per cent.; the Grand Trunk much ahead of its 11 per cent., and in the last week the Fort Wayne had nearly a third more than its share.

The great decrease in the weekly shipments since March will be seen by the following statement of the number of tons shipped in each of the last seven weeks reported.

	Feb. 28.	Mar. 7.	Mar. 14.	Mar. 21.	Mar. 28.	Apr. 7.	Apr. 14.
	60,385	72,051	60,696	69,369	57,447	36,271	35,728

Thus the shipments, from being among the largest ever made, have suddenly fallen to figures smaller than there have been made before while navigation was closed. The cause we have indicated in discussing a parallel falling off in the grain shipments, and it has been chiefly in grain that the decrease has occurred.

The reports of shipments telegraphed from Chicago do not include all the shipments reported above, which are those divided by the roads in the pool, and though they include the Nickel Plate shipments and some local shipments not covered by the pool, they are usually considerably less than the pool shipments. This month the two reports are made for the same weeks, and we see that the Chicago report gives 30,647 tons in the first week of April, including 1,994 by the Nickel Plate, and 82,484 in the second week, including 2,204 by the Nickel Plate, against 36,271 and 35,728 tons, total through shipments by the roads in the pool. For the week ending April 21 the Chicago reports give 28,474 tons shipped, and 1,150 of them by the Nickel Plate.

Rates on grain were reduced from 30 to 25 cents April 16, without the slightest effect on shipments, so far as can be seen, and, curiously, since that reduction was made there has been an advance in lake rates, or in the rates asked, as it does not appear that there have been any charters at these rates, which are 4 cents a bushel for corn and 4½ for wheat to Buffalo.

EAST-BOUND RATES have been reduced as is usual about the time navigation is opened, though it is questionable if there was the usual reason for it. The reduction in the eighth class (grain and flour) rate from the Chicago-New York basis of 30 cents per 100 lbs. to 25 cents was made on Monday of last week (April 16), and apparently it was intended to maintain the provision rates without change through the summer, which would seem a rational thing to do, as the competition of the vessels, which tends to force down the grain rate, hardly extends to provisions, and the winter rate on these was altogether reasonable as a permanent rate. There was some cutting of the provision rates, however, and though it does not seem that it was important or could not have been readily stopped, the Vanderbilt roads demanded, as they have the right to under the agreement, that the regular rate should be reduced to a level with the cut. This reduction in the seventh and ninth classes from 35 and 40 cents to 30 and 35 went into effect last Monday, April 21. They will probably not cause the shipment of a single pound more than would have gone at the old rates, though quite probably shipments have been postponed recently in anticipation of the reduction usually made about this time. The opening of the Chicago & Atlantic is announced for May 1. It should not have the slightest effect on rates; it and all

the other roads will certainly do better if rates are maintained, and we cannot learn that any one expects any trouble on account of it or the Nickel Plate. It will be remembered that when the Chicago & Grand Trunk was opened into Chicago in 1880 it asked for and was awarded a share of the traffic, and the rates thereafter were maintained probably quite as well as they ever have been. If there is any further reduction in east-bound rates this season it will be simply throwing away money. The roads will do better to give up the whole of the export grain trade to the lakes and canal rather than carry half of it at 20 cents, and accept that rate also on all the enormous flour traffic and the local grain traffic, which they will have just the same at 25 cents, or even 30 cents, we imagine. But some may be moved to favor a reduction because of light shipments. They are light now, before navigation is open, and very likely they will be lighter after navigation is open, and we doubt whether they will become much larger until June or later. But reducing rates will not help the matter. If a 20-cent rate is made, the vessels will reduce their rates, and the shipments will be divided about as before, and will probably continue small until the farmers can spare time from field work for marketing grain.

NORTHWESTERN GRAIN RECEIPTS continue to show the great and rapid falling-off which we noticed last week as having begun with the last week of March. While the receipts in March were much larger than ever known before while navigation was closed, those of the second week in April are smaller than the average of recent years. For seven successive weeks, beginning with the week of largest receipts, the number of bushels received at the eight reporting Northwestern markets have been:

	March 3.	Mar. 10.	Mar. 17.	Mar. 24.	Mar. 31.	April 7.	April 14.
	6,231,963	6,074,880	6,023,305	5,450,892	4,718,756	3,651,234	2,999,066

April is not usually a month of much smaller receipts than March. The average per week in each of the months has been, for five years:

	1879.	1880.	1881.	1882.	1883.
March.....	2,895,779	4,262,562	3,162,592	1,986,488	5,759,989
April.....	3,198,289	3,303,586	3,805,876	3,149,473	3,325,449

Thus in 1881 and 1882 the receipts were larger in April than in May, and only in 1880 were they greatly less. But it also appears that the cause is not that receipts were exceptionally small in April this year, but that they were extraordinarily large in March, which was also the case in 1880. What is given as the average receipts in April this year is the average of the first two weeks of the month. If they continue to fall off as they have done, of course the average this month will be less; but they are not yet exceptionally small for April, and it is only the fact that they follow immediately the extraordinary receipts of March that makes them remarkable.

The cause of the decrease may be partly the exhaustion of the surplus which the farmers were anxious to market, but probably also largely the opening of spring at an unusually late date, so that as soon as it was possible to work in the fields the farmers gave their whole attention to that. A late spring often makes it difficult for the farmers to get all their crops in. The sowing of small grains is hardly finished before it is time to plant corn, with very little time between for plowing, which is the work which requires most time. We may not then expect very large grain receipts again until after the corn has been planted—probably not before June.

GRAND TRUNK CREDIT is better than that of most American companies, if we may judge by the success with which it recently negotiated an issue of £750,000 "perpetual 4 per cent. debenture stock," interest payable quarterly. This was all applied for at the price of 90. This issue is chiefly to retire mortgage bonds bearing a higher rate of interest (£78,800 Great Western 7s and \$437,000 Grand Trunk 6s). This interest on the bonds retired is £31,701; that on the new issue £30,000, leaving £234,700 for increasing the assets of the company. This stock is not secured by mortgage, but the interest is payable whether earned or not, and can be recovered by law if not paid, and it is *perpetual*, which is a great recommendation to many investors, and becomes more so as solid Government securities become scarce, as they have become in Europe as well as this country of late years. They are something like the stock of the Chicago, St. Louis & New Orleans road guaranteed by the Illinois Central; but though the Illinois Central's margin over the charges incurred for this and other purposes is much greater than the Grand Trunk's, and its financial reputation is exceptionally high in Europe as well as this country, this stock only sells for about 80, while the Grand Trunk debenture stock brings 90. The Illinois Central lease and guarantee are not perpetual, to be sure, but they are for 400 years, which should be fully equivalent in effect on prices. Probably no one would pay much for the reversion of any railroad stock in the year 2,380. And, indeed, a single cent in a sinking fund at 4 per cent. would produce \$22,000 in that time.

THE TRUNK LINE PASSENGER AGREEMENT has been continued on sufferance since the first of March. The differential rates, etc., were to hold good till then, and the week before a meeting of the Passenger Division of the Joint Executive Committee assembled to decide upon what modifications, if any, in the plan should be made. But just before the meeting Mr. Fink was disabled by a sudden and severe illness, which has kept him confined to his room, and most of the time to his bed, ever since, though happily he is now convalescent. Owing to this the meeting adjourned without doing more than to continue the arrangement then in force provisionally, as it might well do, as the roads that were faring

worst under it were probably making much more money out of their competitive passenger business than they had ever done before. This week the Committee assembled again, to consider under the chairmanship of Mr. S. F. Pierson, lately put in charge of the passenger business of the Joint Executive Committee, the various questions that have been so long in abeyance. The session is not concluded as we go to press. The chief work will probably be some modification of the differential rates.

THE NEW CHICAGO LIVE-STOCK APPORTIONMENT has been appealed from. Ordinarily there is no appeal from the Arbitrator's decision, but in this case Mr. Adams made the original award, which would have been made by Mr. Fink had he been well. The agreement of the roads provides that Mr. Fink shall make a provisional award, from which any dissatisfied party may appeal to the Arbitrator. The award made by Mr. Adams in this case was made without any preliminary award by Mr. Fink, and with the understanding that there might be an appeal from it the same as if it had been made by Mr. Fink. The companies will now present their arguments for their respective claims more fully, probably, than heretofore.

TRUNK LINE WEST-BOUND SHIPMENTS were quite satisfactory in March—not nearly so large as last year, when the freight was carried almost for nothing, but very nearly the same as in 1881 and larger than in any previous year. In fact, the shipments from New York this year have been very nearly the same as in 1881, and nearly same in each of the three months. These shipments have more significance as indicating the prosperity of the country than the east-bound movement.

PROVISION EXPORTS were much larger this year in March than last year (when they were unusually small), but for the first three months of the year the value of the exports was nearly the same both years.

Master Car-Builders' Association—Committee Circulars.

The following additional circular is issued, to which members are requested to send in answers as soon as possible:

STANDARD FREIGHT AND PASSENGER CAR TRUCKS.

At the last meeting of the Master Car-Builders' Association, a committee was appointed on "Standard Freight and Passenger Car Trucks." This committee solicit answers to the following questions, with a request that you give any other information within your reach which may aid them in making an intelligent report:

1. Do you consider a swing bolster desirable? If so, give your reasons.
2. Do you consider a rigid centre preferable to a swing motion? If so, why.
3. What do you regard as the best truck, and what good points do you see in other trucks?
4. Does the truck in use on the road you represent meet your ideas as the most perfect? If so, please send the committee drawings, with details of parts and an explanation of those most liable to breakage and those liable to wear out and requiring the most frequent repairs, giving weight of the different materials and cost of construction. If it has faults, please explain what they are, and what change you would recommend to remedy.
5. What feature in a truck do you consider especially desirable?

As the annual convention will be held in less than three months from the date of issuing this circular, you are requested to give as prompt a reply as possible. Answers should be addressed to the Chairman of the Committee, whose address is "Michigan Central Railroad, Detroit, Michigan."

ROBERT MILLER, Chairman,
WM. McWOOD,
WM. FORSYTH, } Committee.

THE SCRAP HEAP.

Locomotive Building.

The office and address of Thomas B. Innes & Co. and of the Mt. Savage Locomotive Works will be in the Borel Building, No. 115 Broadway, New York City, after May 1 next.

The Baldwin Locomotive Works in Philadelphia have just received an order for 12 engines for the Leopoldina Railroad in Brazil. Several other orders for locomotives for export are on hand.

The Cincinnati, New Orleans & Texas Pacific Co. has just let contracts for 17 heavy freight engines.

Plans are being prepared for several new locomotives to be built at the shops of the Central Railroad, of Georgia, in Savannah and Macon.

The Dickinson Manufacturing Co. in Scranton, Pa., recently delivered a yard engine to the Lowmoor Iron Co., at Lowmoor, Va.

The Eriks Locomotive Works in Dunkirk, N. Y., last week shipped a heavy shifting engine to the Rochester & Pittsburgh road.

Mr. G. W. Soule, President of the Southern Standard Press Co. in Meridian, Miss., has designed a locomotive for use on logging roads, tramways, etc., which is manufactured at Meridian. One of these engines is in use on the logging road of B. B. Warren & Co., at Longview, Ala., with much success.

Car Notes.

The car works of McKee & Fuller, at Catsauqua, Pa., have recently completed orders for 400 gondola and 200 box cars for the Buffalo, New York & Philadelphia, and 100 gondola cars for the Elizabeth, Lexington & Big Sandy road. The Lake Shore Foundry in Cleveland, O., is running full time on car wheels, with about 200 men employed.

The St. John Rolling Stock Co. has been organized at St. John, N. B., and will soon begin the manufacture of railroad cars.

The Pullman car shops in Pullman, Ill., are completing an order for passenger, parlor and baggage cars for the New York, West Shore & Buffalo road.

Iron Notes.

The Indianapolis Rolling Mill in Indianapolis, Ind., is making 1,500 tons of rails for the Wabash, St. Louis & Pacific road.

The Glencoe Iron Works of Arms, Bell & Co. in Youngstown, O., have a large order for track-bolts for the Pittsburgh, Cleveland & Toledo road.

The largest twelve hours' work ever done at the Bessemer

steel works at Troy, N. Y., was performed a few nights since, when, in forty-one heats, 315 tons of steel were produced. This beats by nearly 15 tons the largest previous output at the works.—*American Manufacturer.*

Brown, Bonnell & Co. in Youngstown, O., report several heavy orders for railroad spikes.

The Cleveland Rolling Mill Co. in Cleveland, O., is filling an order for steel rails for the Cleveland, Akron & Columbus road.

The rolling mill of the Pacific Iron & Nail Co. in Oakland, Cal., is now in full operation.

Manufacturing Notes.

The office and warehouses of Henry R. Worthington, manufacturer of pumps and pumping machinery, will be removed on May 1 to No. 145 Broadway and 86 Liberty street, New York, where his business will have much better accommodations than at present.

The stockholders of the Yale Lock Manufacturing Co. have voted to accept the authority given them by an act of the Connecticut Legislature, and change the name of the corporation to the Yale & Towne Manufacturing Co. The change is one of name only, and is made desirable by the enlarged scope of the business. During the past seven years the company has gradually built up a large business in hoisting machinery, including cranes of all kinds and of the largest sizes, and, during the past year, has also undertaken the manufacture of the Emery testing machines. The production of work of this class involves the use of large and heavy machinery, and constitutes a branch of work entirely distinct from that included in the company's lock and hardware department. Another department is being organized for the manufacture, under the patents of A. H. Emery, of scales of all kinds, and of pressure gauges, the development of which will in time, it is believed, make this department of at least equal importance with the older ones. For reasons not necessary to enumerate it has been found expedient to effect a subordinate organization, under the general laws of the state, bearing the old title of Yale Lock Manufacturing Co., and also a similar organization entitled the Weston Crane Co. In like manner the Emery Scale Co. was organized during last year. The stock of all these subordinate companies is owned and controlled by the parent company, and although the several subordinate organizations will be permanently maintained, for purposes relating to the ownership of patents and other franchises, the business of all will be conducted by the Yale & Towne Manufacturing Co., in its own name and for its own account, so that all communications should be addressed to the latter name. The Buckeye Bridge & Boiler Works in Cleveland, O., have several heavy contracts for boilers, and are making 1½ miles of boiler-iron tubing for compressed air, for a mining company in the Lake Superior Region.

The Yale Lock Manufacturing Co. in Stamford, Conn., has just completed the erection of a 15-ton power traveling crane, with a span of 71 ft., for Messrs. Mackintosh, Hemphill & Co., Pittsburgh; a 20-ton crane with a span of 56 ft. for the Scranton Steel Co., of Scranton, Pa.; and is now erecting two 25-ton traveling cranes, with a span of 52 ft., for the Norfolk & Western Railroad. The works are now running with two gangs of men, night and day, and have under way, among other cranes, two 22½-ton cranes, with a span of about 60 ft., for the Chicago & Alton shops at Bloomington, Ill. The peculiarity of these latter cranes is that each crane has two separate trolleys, so that the two cranes combined can lift a locomotive, taking hold at four points.

The Hercules Iron Works in Chicago have completed arrangements with Mr. Julius Hornig, of Jersey City, N. J., for the manufacture of his patent shears, punches and straightening machines.

Bridge Notes.

The Delaware Bridge Co., of New York, has taken a contract for 15 iron bridges on the new Ohio Valley road, between Wheeling, W. Va., and Parkersburg.

The Agricultural Works in Iliou, N. Y., have taken a contract to build four Whipple truss iron highway bridges of 75 ft. span each.

The Rail Market.

Steel Rails.—Business is quite active and sales of some 25,000 tons are reported at \$38 to \$39 per ton at mill. There is also an active demand for light rails, which are quoted at \$40 to \$43, according to section. Street rails are also in active demand.

Rail Fastenings.—Pittsburgh quotations for spikes continue at \$2.60 per 100 lbs., with a more active business. Track-bolts continue to be quoted at \$3.25 per 100 lbs. for square nuts and \$3.35 to \$3.45 for hexagon nuts. Splice-bars are steady at 2 to 2.10 cents per pound.

Old Rails.—Some sales are reported of old iron rails at \$23.50 to \$24.50 per ton at tidewater for tees, and \$27 to \$28 for double-heads. Crop-ends (steel) are quoted at \$22 to \$22.50 per ton.

An Important Patent Decision.

A Washington dispatch of April 19 says: "The Secretary of the Interior to-day confirmed the decision of the Commissioner of Patents, holding that he has authority to institute proceedings like those in interference cases, to obtain testimony upon which to determine whether an invention has been in public use or on sale for two years or more prior to the filing of an application for a patent therefor. Under this decision a new practice will be established in the Patent Office, substantially as follows: Where a petition is presented asking that an investigation be made to determine whether an invention, which is the subject of an application for a patent, has been in public use two years, the Commissioner will direct the Examiner of Interference to fix a time for taking testimony by the petitioner to show the facts alleged in the petition, giving 30 days for the production of such testimony. At the expiration of that time the inventor or his assignee may produce testimony to show that the facts alleged are not true. The testimony will be returned to the Patent Office and considered in the same manner as testimony taken in interference cases."

Numbers on Locomotive Head-lights.

The New York, Lake Erie & Western Co. has recently adopted illuminated numbers on all engines. The numbers are on the side of the head-light and can readily be distinguished while passing stations.

These illuminated numbers on the head-lights have been in use on the Pennsylvania Railroad for several years.

The Railroad Map.

The great mass of humanity that is continually jostling along the busy walks of life may be fully aware of the power that is wielded by railroad corporations. Thousands of people know that a railroad can revolutionize the entire business of a country and turn a wilderness into a city; yet how few of them understand that a bald-headed general passenger agent can in a few moments move mountains, plains, states and rivers as easily as if they were figures on a chess-board. Those who have never witnessed a general passenger agent building the outlines of a new map for his road have missed one of the most soothing scenes of life.

Let the little school boy stop rubbing his sore nose and

glance for a moment at the railroad map, and note how powerful is the brain of man. Let the old and dignified merchant cease thinking about business, take one look and become enlightened. Here is the map. Do you see the straight red line? Yes? Well, that is the railroad. See how straight it runs. Look here and you will see where San Francisco is situated. If you notice, you will find that it is just across the street from New Orleans, and is looking the latter city square in the eyes. They never knew how close they were to each other until they saw the new map. Now, there is Shreveport. It is about three or four miles from New Orleans and in speaking distance of St. Louis. The general passenger agent next year, if there is much competition, will move Shreveport down a few miles and consolidate it with the upper limits of New Orleans, and make San Francisco walk away from the Pacific Ocean and settle down somewhere east of the Rocky Mountains. Don't smile, please; you don't know what the general passenger agent can do when he gets started.

Did you ever see the general passenger agent making a map? No? Well, he takes a ruler and draws a straight line from one point to another. That line represents his railroad. He then moves a couple of states and a dozen towns out of the way so as to make room for his road. Sometimes he gets Arkansas away down in Florida, but he can't help it. After he has got the states fixed and the towns located, he draws a regular spiral coil all over the map. If it is not crooked enough to suit him, he rubs it out and draws another. This is the opposition railroad.

This map when completed is given to the passenger agent, who tells the traveler that it is absurd to buy a ticket by the other road when he can take an air line route. He shows the passenger how crooked the other route is and how straight is his own. The passenger buys a ticket, and then is presented with a map.

The poor, ignorant passenger deserves sympathy, for the reason that the oftener he studies the map the more thoroughly convinced he is that in his youth he was misinformed concerning the geography of the United States. He does not dream for a moment that when an opposition road is a great deal shorter the general passenger agent draws his line that much straighter, even if he has to go out and purchase a carpenter's straight-edge to do it with. The actual course of the road may be as crooked as an old ram's horn, and may go winding all over two or three states, but the passenger sits in the train, looks at his map, and believes firmly that he is traveling ahead as straight as a rifle barrel. He remembers with satisfaction that when he bought his ticket the man behind the counter smiled at him gently and said, "As the arrow darts so do we run."—*New Orleans Times-Democrat.*

An Exciting Trip.

Laurinburg, on the Carolina Central Railroad, is about 40 miles from Charlotte, N. C. When the train leaving Laurinburg arrived at Monroe, a big crowd about the depot showed that something was the matter. A party of young ladies had been waiting for the train. They were under the escort of Mr. E. C. Edgeworth. One of them, Miss Rebecca West, happened to get hold of a pistol which she supposed was unloaded. It went off and the ball struck Mr. Edgeworth and pierced his brain. The unfortunate man fell as the train stopped. A physician was on the train but could do no good. The train started again, and 20 miles lower down the road, at the next station, 20 minutes before it arrived, James Price, a lad of 12 years, accidentally shot Henry Percer, a colored man, in the thigh. Again the medical passenger was called from the train, and binding up the wound, resumed his journey to Charlotte.

At Rockingham, 30 miles from Laurinburg, the passengers found everybody talking about the affray between Chas. McDonald and James Maringe. The former had his abdomen cut open, making a wound from which the entrails protruded. The man was dying when the train left.

At Wadsworth the train hands were paid off and a ball was in progress before the train arrived. Two men, Algernon Mobjack and Silas Selyin, quarreled as to whom the next set with a pretty girl belonged. Selyin was shot by his rival through the thigh, and was lying in the grass when Dr. Huntly stepped from the train. The train reached this place 20 minutes after, and the conductor said in a service of 20 years he and his train had never had such experience. —*Correspondence Cincinnati Enquirer.*

A Railroad Safety Clock.

Peter Long, a gentleman of this place, has patented a railroad signal time clock which indicates the intervening time between trains. It is to be mounted similar to the danger signals, and the engineer can readily tell by glancing at the dial how much time has elapsed since the preceding train passed that point. The clock is made to run regular and show the hour, just like an ordinary timepiece, but an ingenious device connecting the rail and clock-work throws the minute-hand back to 12 when a train passes by the signal. Then the minute hand moves on around until the next train comes along, when it drops back to 12 again. Should any train not be followed by another for an hour or a longer period, then the minute hand will pause at 55 minutes, and remain there until a passing train throws it back to 12, when it starts on as before. The purpose of having the hands stop at 55 minutes is to show that at least that much time has elapsed since a train has gone by, which is sufficient to indicate a clear track. —*Greensburg (Pa.) Press.*

A Just Judge.

The editor of a railway journal was recently brought before a Police Justice, charged with having thrown a large ink-stand, two ten-pound paper-weights, and sundry other missiles at the head of a visitor to his office, inflicting painful injuries. It appears that the person assaulted was the inventor of an automatic car-coupler, and had called on the editor for the purpose of exhibiting a model of his device and explaining its operation. On learning this fact the magistrate declined to hear any further testimony, and fined the complainant one thousand dollars; observing that it gave him pleasure to recognize in the conduct of the journalist on the occasion referred to an example of forbearance under singularly exasperating circumstances which he believed to be almost without a parallel. —*Puck.*

How One Man Got the Best of the Railroad.

It is not often that a big corporation like the Southern Pacific Railroad proves incompetent in a contest against a penniless, single-handed man, and we record the following to note the exception: The Southern Pacific engineer, while scouring the country for water on the desert about 24 miles from the Colorado River, saw a few tufts of grass in a little valley. He put workmen to digging in the ground and developed about four inches of running water, furnishing a bountiful supply for all purposes. As the work progressed they abandoned the spring temporarily. A prospector came along and stooped at the spring to drink of the pure liquid. Perhaps the intensity of his thirst induced him to gaze longer into its pure depths. Perhaps, in his fevered vision, after a long struggle over dreary mountains and dusty deserts, he saw mirrored in the water a sparkling mine of silver. At any rate, he tested the sands that drifted about and got a trace of silver. This little trace of silver resolved into a hundred dollars a ton.

Here, then, was the realization of his hopes, and he went right to work to rob the big corporation. He located the spring for a mill site and the ground as mineral land—all of which is right and holds in law. He notified the company to quit using his water, and they have complied obediently. —*San Bernardino (Cal.) Index.*

Buffer Cars.

The following description is given of the new "buffer" cars which have lately been put on the Missouri Pacific road: The cars are 65 ft. long and have a width of 9 ft., 8 in. The exterior is ornamented in latest Pullman standard style. Trucks have all modern appliances, 33 in. paper wheels, and the riding qualities are the best. The interior is finished in white oak of beautiful design. Large plate-glass windows extend the entire length of the car. Each car has 27 large comfortable chairs of the very latest pattern, and is upholstered in maroon plush. In addition to this, at each end there are two very handsome sofas. At one end there is a very elegant smoking room, handsomely furnished throughout. Toilet rooms for ladies and gentlemen are located at each end of the car. The buffet, or lunch-counter, is situated at one end of each car, and separated from the body of the car by plate-glass partition extending almost the entire width, presenting a full view from any portion of the car. Handsome satin curtains drape from each side. The chinaware used is of a very unique pattern, decorated in handsome Japanese style, and is arranged in racks for that purpose directly behind the glass partition.

An Old Horse Railroad.

The Newark (N. J.) *Advertiser* of April 23 says: "The workmen engaged in excavating the east side of Broad street for the laying of the new pavement, unearthed last week a number of cedar ties, buried several feet below the present street bed. These ties were in an excellent state of preservation, and had a light strap rail of iron on them. They had evidently been down there many years, and much curiosity was excited to know when they were laid down and what for. A reporter called on Jonas Agens this morning, and inquired of him concerning them. Mr. Agens said that they were the track of an old horse car line. The line was started about 1824, and ran from a tavern on South Broad street, kept, he thought, by a man named Pierson. The tavern stood where the house of John S. Peshine now stands. The road ran up Broad street to Bridge street, and after maintaining that route for four or five years, the upper part was abandoned and the route was changed to down Market street to the Plank Road. They ran over this line for several years, when the New Jersey Railroad Co. bought both roads. Several years afterward the old Morris & Essex line had a line of horse cars that ran down from their depot along Broad and through Centre street to connect with the New Jersey Railroad Co.'s track, their passengers being taken to New York over that road."

Watching the Switches and Signals.

The Reading (Pa.) *Eagle* says: "The officials of the Reading road have been experimenting with mirrors at Robeson station the past two days with a view of perfecting an arrangement by which the telegraph operator can see, by consulting a glass on the table, the switches and other signals without going outside of the office. Some trouble was experienced by the men in adjusting the glasses, but the difficulty, it is said, has been overcome. These experiments are important, and it is quite probable that in a very short time the system will be put in operation at all important stations, especially where the operators or agents are held responsible for switches and signals located near their offices. I. A. Sweigard, Superintendent of the Bound Brook Division, L. B. Paxson, B. F. Bertollett and other officials have been watching the result of these experiments, and the adoption of the idea seems to have been settled so far as its success is concerned."

Railroad Religious Work.

Conductor Edwin A. Harris, of Fitchburg, who has been holding revival meetings the past winter in Maryland and Virginia among the railroad men reports a very successful season's work. He closes his labors in that section this week, and with his wife, Miss Addie Sherman and Miss Jennie Smith, of Boston, who have been laboring with him, he will arrive in Massachusetts Saturday afternoon. On Sunday a union railroad men's meeting will be held in Wales street depot at Taunton, under the auspices of this company of evangelists, and afterward they expect to visit Springfield for the same purpose. Miss Jennie Smith will for the future reside at Mountain Lake Park, Md. —*Boston Herald, April 19.*

Canadian Pacific Wages.

The Canadian Pacific Co. announces that it has prepared a new schedule of wages for white labor in British Columbia. The rates are as follows: Overseers, \$125 per month; rock foremen, \$3.50 to \$4 per day; earth foremen, \$2.50 to \$3.50; bridge foremen, \$3.50 to \$4.50; bridge carpenters, first class, \$3.50; bridge carpenters, second class, \$3; masons, \$2.50 to \$3.50; stone-cutters, \$3 to \$3.50; block cutters, first class, \$3.50; block cutters, second class, \$3; block cutters, helpers, \$1.50 to \$2; drillers, \$2 to \$2.25; laborers, \$1.75 to \$2; hewers, first class, \$2 to \$2.50; scorers, \$2.50. All carpenters to furnish their tool chests. All employees to furnish themselves bed, board and lodging. Boarding-houses will be convenient along the line; board, \$4 per week. It will not be compulsory for employees to board in the company's houses. Wages will be paid monthly, on the 10th of each month.

An Old Story with a New Application.

Mr. J. J. Mitchell, the St. Louis Director of the Chicago & Alton, and Mr. H. M. Hoxie, the General Manager of the Missouri Pacific and Wabash systems, were both in the city yesterday, and, meeting, they naturally came to talk of the consolidation of the Missouri Pacific and Wabash systems. Mr. Mitchell was not as enthusiastic about the prospects of the consolidated systems as Mr. Hoxie, being of the opinion that the combined systems were rather too large to be operated by one management. To illustrate his position Mr. Mitchell stated that the matter reminded him of the boy who was told by his mother to put eggs on the nest for the old hen to set on. "How many eggs have you placed under the hen?" said the mother when the boy returned from the job. "One hundred," said the boy. "One hundred," exclaimed the mother in surprise. "The old hen cannot possibly cover that many eggs." "I know that," replied the boy, "but I wanted to give the old hen a chance to stretch." Mr. Hoxie saw the point, and meditatively left Mr. Mitchell's presence. —*Chicago Tribune.*

Caring for the Injured.

J. W. Marsee, M.D., Indianapolis surgeon of the Chicago, St. Louis & Pittsburgh road, Sunday afternoon delivered his second lecture before the employees of this road, 150 or more of whom were in attendance, and quite a sprinkling of employees of other roads. Sunday his special subject was how to treat a person when injured to prevent a loss of blood, he showing where the bandages should be placed to

stop the effusion of blood from any artery or vein. The doctor talks very plainly to the boys, using no words which they cannot understand, and the lectures are highly interesting and instructive. Each engine and caboose on this road has been supplied with a tin box, in which there is one roll of rubber compress, a package of absorbent cotton, six rolls of bandages and one pyramid of pins. On the cover of each box directions of how to use them in case of an accident are distinctly printed. —*Indianapolis Journal.*

A Temperance Order.

Mr. C. A. Swineford, Superintendent of the Madison Division of the Chicago & Northwestern Railway, has issued an address to the employees of his division, giving them a choice of two things: Prompt dismissal from service or unqualified abstinence from the use of intoxicating liquors, whether on or off duty, and that the frequenting of saloons will be taken as evidence that they were there to drink, and be sufficient grounds for dismissal. Superintendent Swineford's is the most practical temperance address of the times.

Cleveland Bridge & Car Works.

The Trustees and Assignees of the Cleveland Bridge & Car Works have issued a circular stating that at the first sale, January 17, no bids were received. The property was again offered March 7, when one bid of \$100,000 was received, but subsequently disallowed by the Court for technical reasons. They have therefore called a meeting of creditors for April 26, in Cleveland, to consider the best plan for the settlement of the estate and the closing of the trust.

A new appraisal, made by order of the Court, fixes the value of the property as follows: Real estate, \$88,645; personal property, \$86,409; accounts, \$4,272; total, \$179,326. The material pledged to secure loans is valued at \$6,915; face value of the loans, \$9,977. The Assignee has \$23,095 accounts receivable and \$19,264 cash.

General Railroad News.

MEETINGS AND ANNOUNCEMENTS.

Meetings.

Meetings will be held as follows:

Cleveland, Columbus, Cincinnati & Indianapolis, special meeting, in Cleveland, O., June 6, to vote on the lease of the St. Louis, Alton & Terre Haute road.

East Tennessee, Virginia & Georgia, special meeting, in Knoxville, Tenn., June 23, to take action upon certain contracts and agreements.

New York & Harlem, annual meeting, at the office in the Grand Central Depot, New York, May 15, at noon.

Dividends.

Dividends have been declared as follows:

Boston & Providence, 4 per cent., semi-annual, payable May 1, to stockholders of record April 20.

Concord, 5 per cent., semi-annual, payable May 1, to stockholders of record April 16.

Pullman's Palace Car Co., 2 per cent., quarterly, payable May 15. Transfer books close May 1.

Railroad and Technical Conventions.

The *Passenger Conductors' Life Insurance Co.* will hold its annual meeting at the Grand Hotel in Cincinnati, May 16.

The *Car Accountants' Association* will hold its annual convention in Philadelphia, May 22.

The *Association of American Railroad Superintendents* will hold its fifth meeting at the Grand Pacific Hotel in Chicago, May 28.

The *Master Car-Builders' Association* will hold its annual convention in Chicago, beginning June 12 next. The meeting will be held in the Grand Pacific Hotel. The charge at the hotel to members will be \$3 per day for ordinary rooms.

The *Association of Railroad Telegraph Superintendents* will hold its annual meeting at the Grand Pacific Hotel in Chicago, beginning on Wednesday, June 13. The Executive Committee has decided to change the date to June 13, from May 16, the date originally fixed, in order that members may have an opportunity of visiting the Exhibition of Railroad Appliances.

The *Yard-Masters' Mutual Benefit Association* will hold its annual meeting in Denver, Col., June 13.

The *Master Mechanics' Association* will hold its annual convention in Chicago, June 19 next. Accommodations have been secured for members at the Grand Pacific Hotel at specified rates, which will be made known, and rooms reserved, on application to the Secretary or to Mr. E. T. Jeffrey, Chairman of the Committee of Arrangements.

The *American Society of Civil Engineers* will hold its annual convention this year at St. Paul and Minneapolis, Minn., beginning June 19. The full arrangements will soon be announced. It is also proposed to make special provision for a visit to the Exposition of Railway Appliances at Chicago, before proceeding to St. Paul and Minneapolis.

The *American Institute of Mining Engineers* will hold its next meeting at Roanoke, Virginia, during the first week in June. A detailed programme of sessions and excursions will be issued early next month. Members are requested to send to the Secretary, Prof. T. M. Drown, Easton, Pa., as soon as possible, the titles of the papers they intend to present at this meeting.

The *General Baggage Agents' Association* will hold its next semi-annual meeting at the Tremont House, Chicago, Aug. 8.

The *New England Road-Masters' Association* will hold its first annual meeting in Boston, Sept. 20. Further particulars will be given hereafter.

Foreclosure Sales.

The *Texas Trunk* road will be sold in Dallas, Tex., May 14, under foreclosure of mortgage. The road was sold at sheriff's sale in August last and was then bought by D. R. Sorrell, of Boston, subject to the bonded debt. It extends from Dallas to Kaufman, 35 miles. The bondholders have made arrangements to buy the road and to organize a new company.

The sale of the *Williamstown* road, which has been several times postponed, is now set for April 28. The sale is under a decree of foreclosure granted by the Chancellor of New Jersey. The road extends from Atco, N. J., to Williamstown, 9 miles, and has never earned more than its running expenses.

New England General Freight Agents' Association.

At the regular meeting of this Association in Boston, April 18, the questions of rates for circus companies, free return passes for shippers and the delay and misuse of cars were discussed. On the first-mentioned topic some interesting facts were presented, showing that a wide discrepancy exists in the rates charged by different roads to circus companies. These companies furnish their own cars, to be hauled by the motive power of the roads and managed by the train hands thereof; the work has to be done at night, and involves much risk. The advance agents of the circuses get favorable contracts from some roads, and use

these as a lever to secure similar terms on others. It was shown by a table presented that while last season the rates varied from 5 cents per car per mile on the Passumpsic to 31 cents per car per mile on the Old Colony and 36 cents per car per mile on the Central of New Jersey, the length of the haul had much to do with the cheapness of the rate. It was agreed that some united action should be taken to secure uniformity in rates. It was voted to do away with the practice of allowing free return passes to men sent in charge of live stock, potatoes, etc.

New England General Passenger & Ticket Agents Association.

At the regular meeting of this Association in Boston, April 18, the time was principally occupied in the discussion of the summer excursion rate sheet for the coming season. The rates finally adopted do not differ materially from those in force last summer.

Joint Executive Committee Meeting.

The general passenger agents and a number of the general managers met at the Windsor Hotel, New York, on call of Commissioner Fink, on April 25, to consider matters relating to the passenger agreements.

The first day was devoted chiefly to discussion and comparisons, but a plan for the settlement of differences in money was approved. There was much discussion looking to a modification of the percentages under which the settlement will be made. It was finally resolved to accept Mr. Fink's figures and apply them to the business covering the last six months ending on Feb. 28. On the recommendation of Mr. Fink a deduction of 20 per cent. was uniformly allowed on the money balances to be paid. This deduction was made to cover the possibility of mistakes in the statistics of travel by the different routes on which Mr. Fink made up his award.

In the afternoon a conference of the general passenger agents was held to arrange the details for a contract to cover a division of the earnings for the next six months. No definite action was taken and the meeting was to be continued on April 26. Details have not yet been dealt with by the committee.

Southern Railway Time Convention.

The Convention met at No. 46 Bond Street, New York, April 18, and was called to order at 11.20 a. m., by R. R. Bridgers, President of the last Convention.

There were present 24 representatives of 26 lines.

Mr. Bridgers nominated Mr. H. F. Kenney for President, but that gentleman declined. Mr. Bridgers was then unanimously re-elected President for the ensuing year.

Mr. C. E. Fugh offered the following resolution, which was adopted:

"Resolved, That the schedule now in force for through southern trains be re-adopted for the coming season, with such local modification as may be made by the several roads."

The following resolution was also adopted:

"Resolved, That where local changes are made they take effect on May 13, 1883."

At the request of the President the Secretary then addressed the Convention on the subject of Uniform Standard Time, stating what action had been taken on the subject at the General Time Convention held at St. Louis on April 11, 1883. His remarks generalized the details of the report (given in full last week).

Mr. Fugh then addressed the Convention in further explanation and in advocacy of the plan proposed.

The following resolutions were then offered and unanimously adopted:

"Resolved, That this Convention recommends the adoption of the following as the future standards for the use of railway lines of the country:

"1. That all roads now using Boston, New York, Philadelphia, Baltimore, Toronto, Hamilton or Washington time as standard, based upon meridians east of those points, or adjacent thereto, shall be governed by the seventy-fifth meridian or Eastern Time (four minutes slower than New York time).

"2. That all roads now using Columbus, Savannah, Atlanta, Cincinnati, Louisville, Indianapolis, Chicago, Jefferson City, St. Paul or Kansas City time, or standards based upon meridians adjacent thereto, shall be run by the ninetieth meridian time, to be called Central Time, one hour slower than Eastern Time, and nine minutes slower than Chicago time.

[This includes roads run by Macon, Rome, Nashville, Selma, Mobile, St. Louis, Vicksburg, Dubuque, Minneapolis, St. Joseph, Galveston, Houston and Omaha time, in addition to those named above; also, the Union Pacific to North Platte and Wallace; the Burlington & Missouri River to (about) Culbertson; the Atchison, Topeka & Santa Fe to Coolidge; the Texas Pacific to Toyah, and the Galveston, Harrisburg & San Antonio to Del Rio.]

"3. That west of the above-named sections the roads shall be run by the one hundred and fifth and the one hundred and twentieth meridian times, respectively, two and three hours slower than Eastern Time.

"4. That all changes from one hour standard to another shall be made at the termini of the roads or at the ends of divisions.

"5. That the Secretary be instructed to forward a copy of these resolutions, together with a copy of the report of the Secretary, and of the maps accompanying the report, to all general managers and superintendents, with a request for a response whether they are in favor or not of the plan proposed, and whether they will or will not adopt the proposed standard. That the Secretary be instructed to endeavor to secure the acquiescence of all parties to the plan proposed, and to embody the replies in a report to the next Convention for final action."

(These resolutions are identical with those passed at the St. Louis Convention.)

The following resolution was then adopted:

"Resolved, That the next meeting of the Convention be held in these rooms on Wednesday, Oct. 17, 1883."

The Convention then adjourned.

ELECTIONS AND APPOINTMENTS.

American Refrigerator Transit Co.—Mr. Henry Sumner is appointed Accountant, with office in St. Louis, in place of John Clifton, resigned. Mr. Sumner will also have charge of the purchase of all supplies.

Atchison, Topeka & Santa Fe.—At the annual meeting in Topeka, Kan., April 19, the old directors were unanimously re-elected. After the new board was organized the resignation of Mr. Oliver Ames, on account of pressure of other business, was presented, and Mr. A. E. Touzalin was unanimously elected to fill the vacancy. All of the old officers were re-elected. The following are the directors: Isaac T. Burr, Benjamin P. Cheney, William B. Strong, A. E. Touzalin, Thomas Nickerson, Charles J. Paine, Charles W. Pierce, Alden Spears, Albert W. Nickerson, Boston; Sidney A. Kent, Chicago; L. Severy, Reading, Pa.; C. K. Holliday, Topeka, Kan.; B. F. Stringfellow, Atchison, Kan. The officers are: William B. Strong, President, Boston;

A. E. Touzalin, Vice-President, Boston; C. C. Wheeler, General Manager, Topeka, Kan.; Edward Wilder, Secretary and Treasurer, Topeka; George L. Goodwin, Assistant Secretary and Assistant Treasurer, Boston; S. Lothrop Thordike, Comptroller, Boston; John P. Whitehead, General Auditor, Boston; J. F. Goddard, Traffic Manager, Topeka, Kan.; H. C. Clements, Auditor, Topeka; A. S. Johnson, Land Commissioner, Topeka; A. A. Robinson, Chief Engineer, Topeka.

Atlantic Highlands & New York.—The officers of this new company are: President, John S. Applegate; Secretary, Edward Bowne; Treasurer, Thomas H. Leonard. Office at Red Bank, Monmouth County, New Jersey.

Baltimore & Ohio & Chicago.—At the annual meeting in Chicago, April 19, the following directors were chosen: Miner T. Ames, David Lee, I. G. Lumbard, Carroll Spriggs, John Tyrrell. The road is owned by the Baltimore & Ohio.

Central Ohio.—At the annual meeting in Columbus, O., April 25, the following directors were chosen: Orland Smith, J. H. Collins, Isaac W. Hall, Bradford Dunham, J. G. Harvey, Robert Garrett, David Lee, J. R. Swan, H. B. Brooks, Daniel Applegate, J. W. Jenkins, Osman Latrobe, W. H. Clements. The road is leased to the Baltimore & Ohio.

Chautauqua Steamboat Co.—The officers of this company, which now owns all the steamboats on Chautauqua Lake, are: President, Oliver Watson, Buffalo, N. Y.; General Manager, Wm. S. Baldwin, Buffalo; Superintendent, T. E. Grandin, Jamestown, N. Y.; Secretary, E. T. Parker, Buffalo; Treasurer, F. S. Buell, Buffalo; Auditor, Wm. L. Doyle, Buffalo.

Chicago, Burlington & Quincy.—At the annual meeting in Chicago, April 25, the old directors were re-elected without opposition.

Chicago, Rock Island & Pacific.—Mr. John S. Cook has been appointed Division Freight Agent, with office at Kansas City, Mo., to date from May 1.

Cleveland, Youngstown & Pittsburgh.—Mr. D. T. Lumley, Assistant Chief Engineer, has been appointed General Superintendent in place of W. E. Lewis, who has gone to the Mexican National road. Mr. Lumley's office is in Alliance, O.

Consolidated Railroad Co., of Vermont.—This company has been organized, as successor to the Vermont Central and the Vermont & Canada, with the following directors: J. Gregory Smith, E. C. Smith, St. Albans, Vt.; W. H. Bingham, Stow, Vt.; James R. Langdon, Montpelier, Vt.; Joseph Hickson, Montreal; Ezra H. Baker, B. P. Cheney, Boston.

Duluth & Iron Range.—The board has elected Charlesmagne Tower, Jr., of Philadelphia, President in place of George C. Stone, resigned.

Eufaula & Clayton.—The officers of this company, successor to the Vicksburg & Brunswick, are: President, W. G. Raoul; Secretary and Treasurer, Edward McIntyre. The road is owned by the Central, of Georgia.

Grand Rapids & Indiana.—The directors chosen at the recent annual meeting are: W. O. Hughart, H. J. Hollister, W. R. Shelby, Grand Rapids, Mich.; S. S. Cobb, Kalamazoo, Mich.; J. G. Wait, Sturgis, Mich.; Pliny Hoagland, C. A. Zollinger, Fort Wayne, Ind.; J. N. McCullough, Thomas D. Messler, Wm. Thaw, Pittsburgh, Pa.; John P. Green, George B. Roberts, Philadelphia; Robert B. Potter, New York.

Hampton.—At the annual meeting in St. John, N. B., April 20, the following directors were chosen: A. E. Killam, Robert Marshall, W. H. Rourke, W. E. Skillen, John A. Wheaton. The board elected A. E. Killam President; James Hanway, Secretary; Robert Marshall, Treasurer.

Houston & Texas Central.—Mr. A. C. Hutchinson, President of this company, has issued the following circular, dated Houston, Tex., April 16:

"Colonel G. Jordan, having resigned the office of Vice-President and General Manager, the following changes in the organization of the Houston & Texas Central Railway, are hereby announced to take effect from and after this date:

"1. Mr. J. Waldo, having been elected Vice-President, will in addition to his duties of Vice-President, continue as Traffic Manager in charge of the commercial interests of the company.

"2. Mr. A. H. Swanson, heretofore General Superintendent, is appointed General Transportation Manager, and will have charge of the roadway, rolling stock, machinery, stations and the handling of trains.

"All other officers remain as heretofore."

Indiana & Southern Illinois.—Mr. W. C. Lyon is General Manager; C. H. Steel, Auditor; L. B. McConaha, Superintendent of Telegraph and Train Dispatcher. Offices at Robinson, Ill.

Mexican National.—The following circular from Vice-President Thomas C. Purdy is dated Mexico, March 30: "The resignation of Mr. John Scullin as General Manager having been accepted, to take effect April 1, the office of General Manager will be then discontinued."

"Mr. Wm. Cross Buchanan is appointed Manager of Construction, to take effect April 1. All officers and employees of the Construction Department heretofore reporting to the General Manager will report to the Manager of Construction; all other officers and employees heretofore reporting to the General Manager will, until further notice, report directly to the Vice-President.

"Mr. W. Morcom is appointed General Freight and Passenger Agent for the Southern Division."

Michigan Central.—Mr. W. R. Busenbark is appointed Eastern Passenger Agent, with office in Buffalo, N. Y. Mr. W. H. Underwood, late with the Wabash road, succeeds Mr. Busenbark as Western Passenger Agent, with office in Chicago.

Mobile & Ohio.—Mr. Daniel P. Bestor has been chosen a director in place of A. L. Rives, resigned.

Pittsburgh Southern.—At the annual meeting in Pittsburgh last week, the following were chosen: President, Thomas M. King; Directors, H. S. Burgess, John K. Cowen, Robert Garrett, John S. McClave, S. Spencer, J. B. Washington; Secretary, J. B. Washington; Treasurer, W. H. Ijams. The road is owned by the Baltimore & Ohio.

Rumford Falls & Buckfield.—Mr. L. L. Lincoln has been appointed Superintendent in place of Otis Hayford, resigned, with office at Canton, Me. Mr. Lincoln is now Superintendent of the Eastern Maine road.

Sinnemahoning & Sheffield.—Dr. Charles P. Earle, of Ridgway, Pa., is President of this new company.

Staten Island.—The new board has elected Francis C. Drane, General Manager; J. J. Stephens, Secretary and Auditor; Holton Wood, Treasurer.

Valley, of Ohio.—At the annual meeting in Cleveland, O., April 18, the following directors (one-third of the board) were re-elected: W. J. Boardman, S. H. Coe, John Tod. The board elected J. H. Wade President; S. T. Everett, Vice-President and Treasurer; W. B. Porter, Secretary and Auditor; J. E. Turk, Superintendent and Chief Engineer.

West Virginia & Ohio Mineral.—The officers are: President, A. C. Houston; Secretary, M. J. Kester; Treasurer, Frank Hereford. Office at Union, West Virginia.

PERSONAL.

—Col. G. Jordan has resigned his office as Vice-President and General Manager of the Houston & Texas Central road, to accept a position on the Mobile & Ohio.

—Mr. B. F. Matthias has resigned his position as Assistant General Passenger Agent of the Toledo, Cincinnati & St. Louis, to accept a position on the Cincinnati, Hamilton & Dayton.

—Mr. Milton Courtwright, widely known as an engineer and railroad contractor, died at his residence in Erie, Pa., April 26. He had had very extensive contracts, including part of the Union Pacific, the Canada Southern and many other roads. He was, at the time of his death, building the Virginia Beach road near Norfolk.

—Mr. Frederick W. Eames, inventor of the Eames vacuum brake, was shot and killed in Watertown, N. Y., April 20, by a workman named Higham. Mr. Eames recently returned from Europe, and was trying to take possession of the works of the Eames Vacuum Brake Co. in Watertown under a judicial order, when a contest occurred in which he was shot.

—Mr. James Park, Jr., one of the earliest manufacturers of steel in this country, died in Pittsburgh, April 21, aged 63 years. He was head of the firm of Park Brothers & Co., of the Black Diamond Steel Works, and was largely interested in several other manufacturing enterprises. He was for several years a director of the Allegheny Valley Co., and was interested in many public and benevolent institutions in Pittsburgh.

—Col. Andrew Talcott, who died in Richmond, Va., April 21, was born in Glastonbury, Conn., in 1797, and graduated from West Point in 1815; at the time of his death he was the oldest surviving graduate of that institution. He served in the Engineer Corps until 1836, when he resigned, and was for several years Assistant Chief Engineer of the Erie road, and afterwards served as Superintendent of the improvement of the Delta of the Mississippi River; member of the commission for the exploration and survey of the north-east boundary of the United States, and of the commission of naval officers and engineers for examining Portsmouth and Pensacola navy-yards. From 1848 to 1855 he was Chief Engineer of the Richmond & Danville road, having charge of the construction of that line. In 1857 he went to Mexico, and remained in that country until 1867, with the exception of a few months in 1861. Since 1867 he has lived a retired life in Baltimore and Richmond. He was father of Col. T. M. R. Talcott, now General Manager of the Richmond & Danville road, and of three other sons and three daughters. Col. Talcott was highly esteemed, both for his personal qualities and for his great abilities and experience as an engineer. He was the inventor of the Talcott method of determining latitude by means of the zenith instrument, which is now generally used not only in the United States Coast Survey, but throughout the world.

TRAFFIC AND EARNINGS.

Railroad Earnings.

Earnings for various periods are reported as follows:

Three months ending March 31:

Alabama Great Southern	\$251,721	\$196,190	I.	\$55,531	28.3
Central of Georgia	921,700	861,915	I.	59,785	7.1
Louisville & Nashville	3,295,541	2,993,975	I.	301,566	9.2
Net earnings	1,171,399	1,234,186	D.	62,786	4.3
Norfolk & Western	609,166	463,000	I.	146,166	23.6
Net earnings	2,438,088	187,251	I.	65,037	2.7
Northern Central	1,492,982	1,295,707	I.	197,275	14.8
Net earnings	492,440	331,800	I.	160,640	48.4
Marquette, Hought. & Ont.	56,203	72,138	D.	15,935	22.1
Pennsylvania	11,839,655	10,592,396	I.	1,247,259	11.8
Net earnings	4,293,978	3,680,489	I.	613,489	16.4
Phila. & Reading	4,731,877	4,403,585	I.	328,292	7.0
Net earnings	1,992,182	1,604,534	I.	387,648	24.5
P. & R. Coal & Iron Co.	5,335,972	2,804,806	I.	2,531,166	83.2
Net earnings	1,276,440	140,240	D.	1,136,200	66.2
South Carolina	415,974	365,118	I.	50,856	13.9
Vicksburg & Meridian	139,009	120,494	I.	18,515	10.4

Two months ending Feb. 28:

N. Y., Lake Erie & West.	\$1,806,485	\$2,023,733	I.	\$217,248	7.0
Net earnings	338,771	474,483	I.	135,712	33.9
Union Pacific	3,729,742	4,021,640	D.	291,898	7.3
Net earnings	1,576,091	1,593,378	I.	17,287	21.0

Month of February:

N. Y., Lake Erie & West.	\$1,288,616	\$1,304,757	D.	21,141	1.6
Net earnings	233,800	231,700	D.	2,100	19.7
Union Pacific	1,743,207	1,835,620	D.	92,413	5.0
Net earnings	674,460	523,397	I.	151,072	29.0

Month of March:

Alabama Great Southern	\$85,822	\$98,885	I.	\$13,063	24.5
Central of Georgia	276,000	258,166	I.	17,834	6.9
Net earnings	64,500	33,871	I.	30,629	47.9
Marquette, Hought. & Ont.	20,000	24,052	D.	4,052	16.9
Norfolk & Western	217,334	174,769	I.	42,565	24.3
Net earnings	135,844	87,161	I.	48,683	54.7
Northern Central	506,641	414,778	I.	91,863	22.2
Net earnings	204,504	117,461	I.	87,043	73.1
Pennsylvania	4,189,380	3,912,293	I.	277,087	7.4
Net earnings	1,454,427	1,415,812	I.	38,615	2.8
Phila. & Reading	1,669,243	1,610,000	I.	59,243	3.7
Net earnings	690,749	600,440	I.	90,309	15.0
P. & R. Coal & Iron Co.	1,161,483	917,631	I.	243,852	28.7
Net earnings	11,759	15,049	D.	3,290	28.7
South Carolina	136,753	112,878	I.	23,875	21.1
Vicksburg & Meridian	43,762	36,173	I.	7,589	21.1

Second week in April:

Chl. & Eastern Illinois	\$31,032	\$29,147	I.	\$1,885	6.5
Chl., Ind., St. L. & Chl.	47,009	46,523	I.	486	1.0
Grand Trunk	247,304	231,107	I.	16,197	8.3
Mo. Pacific Lines	665,339	534,672	I.	130,667	21.7

Third week in April:

Chl., Mil. & St. Paul	\$458,000	\$354,235	I.	\$103,765	20.3
Chl., St. P., Minn. & Ont.	3,800,000	3,700,000	I.	100,000	2.6
Chl., St. P., Minn. & Ont.	96,300	84,200	I.	12,100	14.4
Denver & Rio Grande	137,900	138,400	D.	500	0.4
Den. & R. G. Western	14,800	14,800	I.	0	0.0
Northern Pacific	149,000	149,000	I.	0	0.0
St. L. & San Francisco	66,500	66,500	I.	0	0.0
St. P., Minn. & Manitoba	188,000	149,000	I.	39,000	20.2

Grain Movement.

For the week ending April 14 receipts and shipments of grain of all kinds at the eight reporting Northwestern markets and receipts at the seven Atlantic ports have been, in bushels, for the past seven years:

Year.	Northwestern receipts.	Northwestern shipments.	Atlantic receipts.
1877	2,517,390	2,268,531	1,881,480
1878	4,530,622	3,562,616	2,759,316
1879	2,503,486	3,256,099	3,256,099
1880	3,064,997	3,805,446	1,492,295
1881	3,765,907	4,110,660	3,357,380
1882	2,575,624	3,341,289	1,532,669
1883	2,969,666	2,260,563	2,052,958

The receipts of the Northwestern markets are still larger

than in the corresponding week of last year, but less than in 1881, 1880 and 1878. They are also 651,568 bushels less than in the previous week of this year, and only about half as great as the average in March. The shipments of these markets are less than in the corresponding week of any previous year here reported and nearly a third less than last year. Then, however, navigation was open. The rail shipments of the week this year were exceeded only in 1879 and 1881. The shipments were nearly the same as the week before. Of the total, 207,605 bushels or 9.2 per cent. went down the Mississippi.

The receipts of the Atlantic ports for the week were more than twice as great as in the corresponding week of last year, but were very much less than in either of the three years previous. They were somewhat greater than the week before, but with that exception are the smallest since the middle of February. Compared with the previous week there is a decrease everywhere except at New Orleans, where there is an increase of 513,000 bushels, and at New York, where the increase is trifling. At Philadelphia and Baltimore, the receipts are the smallest of the year, at Philadelphia the smallest since October, at Baltimore the smallest since the first week of July, which indicates a cessation of shipments from the Ohio Valley and the other more southerly grain shipping territory. This is also indicated by the extraordinary falling off of receipts at St. Louis, while compared with the previous week there is a total decrease of 651,568 in Northwestern receipts. St. Louis lost 275,504, and Peoria 182,195 bushels. Only three weeks previous St. Louis received 1,651,993 bushels, this week but 389,189, the decrease being 1,262,804 bushels, or 76 per cent., while at Chicago the decrease in the same has been but 379,165 bushels, and 18 per cent. In the earlier week, Chicago had 38.8 per cent., and St. Louis 30.3 per cent. of the total Northwestern receipts; in the last week, St. Louis' percentage was 13 per cent., and Chicago's 58 per cent. The approaching opening of lake navigation may have something to do with sending grain to Chicago rather than St. Louis, but probably more is due to the earlier occupation of the farmers with field work in the country which chiefly markets by way of St. Louis, while in a large part of the district which ships to Chicago and Milwaukee field work was not yet possible.

Exports from Atlantic ports for the week to April 16 have been, for three years:

	1881.	1882.	1883.
Flour, bbls.	138,750	51,037	114,153
Grain, bu.	3,526,823	950,093	2,166,738

Thus, though the exports this year were more than twice as great as last year, they were a third less than in 1881 and were in fact small.

Of the exports of grain in the second week in April 23.9 per cent. went from New York, 28.8 from Baltimore, 15.6 from Philadelphia, 12.8 from New Orleans and 9 per cent. from Boston.

Coal.

Coal tonnages for the week ending April 14 are reported as follows:

	1883.	1882.	Inc. or Dec.	P. c.
Anthracite	446,181	656,345	D.	210,164 32.0
Semi-bituminous	118,151	74,895	I.	43,256 44.3
Bituminous, Penna.	59,770	61,500	D.	1,731 2.9
Coke, Penna.	68,709	52,484	I.	16,225 30.9

The Philadelphia & Reading Coal & Iron Co. has issued a very convenient and useful chart, showing the coal tonnage of all the anthracite districts, both in figures and graphically, from the beginning of the trade to the present date, with much other information. Also a smaller table giving the location of all the anthracite collieries and the description of coal mined at each.

The coal tonnage of the Pennsylvania Railroad for the week ending April 14 was:

	Coal.	Coke.	Total.
Originating on the line	128,645	47,488	176,133
Received from other lines	36,750	21,221	57,971
Total	165,395	68,709	234,104

The total tonnage this year to April 14 was 3,460,038 tons; to the same time in 1882 it was 3,148,070 tons; increase this year, 311,968 tons, or 9.9 per cent.

Cumberland coal shipments for the week ending April 21 were 41,515 tons. The total shipments this year to April 21 have been 587,754 tons.

The coal tonnage of the Kansas City, Fort Scott & Gulf road in 1882 was 371,039 tons; 1881, 284,039; increase, 87,000 tons, or 30.6 per cent. Of the tonnage in 1882 there were 101,700 tons from points on the main line, 143,212 tons from the Rich Hill Branch and 126,127 tons from the other branches south of Fort Scott.

Rates on Emigrant Live-Stock.

Mr. William S. Mellen, General Freight Agent of the Chicago & Northwestern Railway, announces that after this date rates on stock cattle to points on the road in Dakota will be as follows: From all points east of the Mississippi River, \$55 per car; from points on the Winona & St. Peter Division east of and including Mankato, \$40 per car; from all points in Iowa west of the Mississippi River to and including Nevada, Iowa, on the line, and to and including Ellsworth, on the Northern Iowa Division, \$45 per car; from all points in Iowa on the line from Elmore to Des Moines, inclusive, and west of this line in Iowa, \$40 per car, unless existing tariff is less. Rules at present in force governing the free transportation of persons in charge of live-stock east-bound to apply, except that no return passes will be given.

Southern Railway & Steamship Association.

The following circular is dated Atlanta, Ga., April 14: "The matter of divisions of business at Atlanta and Macon came before the Board of Arbitration at Atlanta on April 11 and 12. After a careful consideration of the facts and arguments in the case, the following divisions are awarded by the Board, consisting of Messrs. Virgil Powers and T. H. Carter.

DIVISIONS OF MERCHANDISE AT ATLANTA.

East Tennessee, Virginia & Georgia	24 1/2 per cent.
Richmond & Danville	29 1/2 "
Central of Georgia	46 "
Georgia Railroad	46 "
Total	100 "

DIVISIONS OF COTTON AT ATLANTA.

Western & Atlantic	7 per cent.
East Tennessee, Virginia & Georgia	24 1/2 "
Richmond & Danville	21 1/2 "
Central of Georgia	47 "
Georgia Railroad	47 "
Atlanta & West Point	47 "
Total	100 "

DIVISIONS OF MERCHANDISE AND COTTON AT MACON.

East Tennessee, Virginia & Georgia	30 per cent.
Central of Georgia	32 per cent.
Georgia Railroad	70 "
Atlanta & West Point	68 "
Total	100 "

"The foregoing are average divisions, and the business will be apportioned according to the system heretofore pursued."

The Rate Committee met in Baltimore, April 20, the

especial object of the meeting being to adjust rates between interior points and the seacoast cities. A sub-committee recommended a general advance on the lower classes of freight. The question was referred back to the sub-committee, which made a second report on the following day, recommending a few changes and a general equalization of rates.

The St. Louis Live Stock Apportionment.

The award made by the Arbitrator, Mr. Charles Francis Adams, Jr., on the division of the live stock traffic from St. Louis is as follows, as compared with the apportionment by Mr. Fink:

	New percentage.	Old percentage.
Vandalia Line.....	25 1/2	20
Chicago & Alton.....	21 1/2	21
Cleveland, Columbus, Cincinnati & Indianapolis.....	21 1/2	21
Wabash, St. Louis & Pacific.....	21 1/2	21
Ohio & Mississippi.....	10	11
Total.....	100	100

It is said that the Vandalia line demanded at least 30 per cent. of the business. Until Mr. Fink's award a few months ago the Ohio & Mississippi had 12 per cent. and the other roads 22 per cent. each.

Transportation of Texas Cattle.

A dispatch from Dallas, Texas, April 16, says: "Owing to the cattle range of South and Southwest Texas being greatly curtailed by settling up of lands and devoted to agriculture, many large cattle raisers have determined to remove their herds to Northwest Texas, particularly to the Panhandle region. As it is almost impossible to secure any well-defined trail on account of the improvements, the transfers will be made almost entirely by rail. Ward & Rugley, of Kansas City, have inaugurated the move and have secured a rate of transportation for themselves and several friends to have 75,000 head of cattle shipped via the Gulf, Colorado & Santa Fe and the Fort Worth & Denver roads from Milheim to Wichita Falls at \$35 per car. The first shipment was made this morning. An average of 25 cattle can be put in each car, at which rate it will take 3,000 cars to move the herds in question. Trains will average fourteen car-loads, and so it will require 215 trains. This, it is claimed, is the biggest single trip in the way of railroad transportation of cattle ever heard of in Texas.

"A prominent cattle man, Mr. John Dawson, gives it as his opinion that this is only the advance guard, and for a year to come the railroad companies will be kept busy moving the stock of cattle from the neighborhood of Corpus Christi to the country north of Wichita Falls. He has been through the state and could testify that it was to-day impossible to use the trail, in fact there was no trail left."

RAILROAD LAW.

Liability for Damages to Adjoining Property.

The United States Supreme Court last week rendered its decision in the case of the Baltimore & Potomac Railroad Co., plaintiff in error, against the Fifth Baptist Church; in error to the Supreme Court of the District of Columbia. This was a suit for damages brought by the trustees of the church against the railroad company on account of alleged injury to the property of the former, caused by the erection and maintenance of an engine house and machine shop on land adjoining the church edifice. The main feature of the defense set up by the company is that it was authorized by an act of Congress to bring its track within the limits of the city of Washington, and to construct such works as were necessary and expedient for the completion and maintenance of its road. This Court holds that such authority from Congress would not justify the company in invading other property to an extent which would amount to an entire deprivation of its use and enjoyment without compensation to the owner. Nor could such authority be invoked to justify interference with the use and enjoyment of others' property, where different places from those occupied could be used by the company for its purposes without such detriment or annoyance. The acts that a Legislature may authorize, which without such authorization would constitute nuisances, are those which affect public highways or public streams, or matters in which the public have an interest, and over which the public have control. The legislative authorization exempts only from liability to suits, civil or criminal, at the instance of the state. It does not affect any claim of a private citizen for damages for any special convenience and discomfort not experienced by the public at large. The grant of powers and privileges to do certain things does not carry with it any immunity for private injuries which may result in the exercise of these powers and privileges. The judgment of the District Supreme Court in favor of the church must therefore be affirmed. Opinion by Justice Field.

Tax Exemptions on New Roads in Tennessee.

The following bill has been passed by the Legislature of Tennessee and has become a law:

Section 1. Be it enacted by the General Assembly of the state of Tennessee, that all railroad companies chartered by the state which have not been able to complete their roads within the time allowed by their charters, shall be and are hereby granted two years from the date of this act in which to complete their roads, and the acts of incorporation of said roads so far as they conflict with this act are hereby amended.

Sec. 2. Be it further enacted, that all railroads availing themselves of the provisions of this act shall surrender any and all exemptions from taxation claimed under original charters or amendments thereto; provided, the Southwestern Railroad Co. shall be excepted from the privileges of section 1 of this act.

Sec. 3. Be it further enacted, that this act shall take effect from and after its passage, the public welfare requiring it.

Connecticut Railroad Law.

The "short haul" freight bill, forbidding railroads to charge a higher rate for short distances than for longer ones, passed the Connecticut House a week ago by a vote of 150 to 21, but was defeated in the Senate by a vote of 15 to 6. It was especially aimed at the rates on coal from Sound ports, which are, on many of the Connecticut roads, higher to the way stations than to competitive points like Willimantic and Hartford.

Mail Compensation on Land Grant Roads.

A Washington dispatch of April 18 says: "Certain railroads to which grants of land have been made in the ordinary course of business executed contracts with the Postoffice Department to carry mails from July 1, 1875, to June 30, 1879, at rates fixed under the act of March 3, 1873. An act was passed in 1876 to reduce the pay to all railroad companies 10 per cent., and to certain land-grant roads 30 per cent. It was decided that land-grant roads under contract were subject to this reduction. In pursuance of the

law of 1876, the Postoffice Department withheld this amount. Some of the companies brought suit in the Court of Claims to recover the amount so withheld. The Court of Claims held that Congress had authority to pass the act making the reduction, and the government was not liable for the amount in the suit. This ruling, on appeal to the Supreme Court, was reversed. The Court held that contracts between the United States and railroads were binding on both parties for the full term of four years; that the act of Congress under which the reduction was made was unauthorized, and that the railroads were entitled to the amount withheld by the Postoffice Department. The Supreme Court having thus settled the law, and the railroads being entitled to full compensation provided in their contracts under this decision, the Postmaster General has directed the payment of all pending claims of the same character without further litigation."

Highway Crossings in Massachusetts.

The Massachusetts Legislature has passed the following bill, and it has become a law: "At any point where a highway, town-way or traveled place is crossed at the same level by a railroad, the Board of Railroad Commissioners may, after notice to and hearing of the railroad corporation whose road so crosses, direct in writing that gates shall be erected across said way or place, and that an agent be stationed to open and close such gates when an engine or train passes, or that a flagman be stationed at the crossing, who shall display a flag whenever an engine or a train passes, and the corporation shall comply with such order."

OLD AND NEW ROADS.

Atlantic Highlands & New York.—This company has been organized to build a railroad from Atlantic Highlands, N. J., a summer resort a few miles north of Long Branch, to the New Jersey Southern road. The road will be three miles long, and the capital stock is fixed at \$100,000.

Baltimore & Ohio.—This company, in the prospectus of its new loan of \$12,000,000 4 1/2%, issued in London, gives the following description of its new line from Baltimore to Philadelphia. "The issue price of the loan in London was about 99 1/2%." "The Philadelphia Branch Railroad," President Garrett writes, "will extend from Baltimore to a point upon the northern boundary of Maryland, and at its northern terminus the Baltimore & Philadelphia Railroad will begin, and extend through Delaware, via Wilmington, to Philadelphia." The branch railroad is being constructed under the charter of the Baltimore & Ohio Railroad, and the Baltimore & Philadelphia Railroad under its own charter.

Under an arrangement with the Baltimore & Philadelphia Railroad for the construction of its railroad, the Baltimore & Ohio Co. becomes the owner of all the capital stock of the Baltimore & Philadelphia road, amounting to \$5,000,000, excepting 500 shares of \$50 each, held by other parties, and for purpose of corporate organization; and likewise becomes the owner of all the first mortgage bonds of that company, amounting to \$5,000,000, secured by a first mortgage on the Baltimore & Philadelphia Railroad line, together with all its present and after acquired property. The roads, as required by the laws of the respective states, will be built under separate charters, but they will be operated by the Baltimore & Ohio road as one line. The prospectus further states that "Over this line of railroad will pass the immense freight and passenger traffic of the Baltimore & Ohio Railroad Co. between the Northwest, West, Southwest and the South and Philadelphia, New York and points in New England. When the road is completed it will form one of the most important links in the chain of communication, not only between New York, Philadelphia and Baltimore, but between New York and Philadelphia and Washington, the national capital, and all other points reached by the Baltimore & Ohio Railroad and its various connecting and co-operating lines." The road will be constructed with double track, with best steel rails, and with all the modern appliances necessary to the perfect equipment of a first-class railroad. Provision has been made for the cost of the road to the two companies at \$17,000,000, but the Baltimore & Ohio Railroad Co. provides, from its own resources, beyond the amount of the mortgage loan now offered, all that is required to construct and fully equip the line, including any excess above the \$17,000,000. "The apparent costliness of the road is due to the large expenditures for adequate terminal facilities in Baltimore and Philadelphia, and to the great expense incurred for a long and high iron bridge over the Susquehanna River, which is very wide at the point of crossing that has been selected, in view of its prominent advantages for the line north and south of the river."

Bellaire, Zanesville & Cincinnati.—Work is actively in progress on the extension of this road from Woodsfield, O., eastward toward Zanesville. Work will soon be begun between Zanesville and Chillicothe.

Boston Elevated.—The bill chartering a company to build an elevated railroad, on the Meigs single-rail plan, in Boston, has been defeated in the Massachusetts Senate, which puts an end to the project for this year.

Boston & Lowell.—This company has sold to C. H. Vener & Co., of Boston, the \$250,000 new 4 1/2% per cent. bonds issued to pay for the Middlesex Central road. It is understood that the bonds were taken at par.

Boston & Maine and the Eastern.—The present condition and future probabilities in relation to the completion of the lease of the Eastern Railroad to the Boston & Maine Co. are thus summed up by the Boston Advertiser of April 25:

"Very little has been heard during the past few days regarding the lease of the Eastern to the Boston & Maine, and it has come to be generally considered that no serious opposition to the scheme will be met in the New Hampshire Legislature. This is by no means certain, however. While a good many hitherto inimical interests have no doubt been conciliated, it is said that several others, equally powerful, are still hostile, and there is a prospect of some very strenuous opposition when the matter comes before the legislature. It has been reported that the Hon. Frank Jones, of Portsmouth, has decided not to oppose the lease, but so far Mr. Jones has given no authoritative statement on the subject, and there are counter rumors that he is trying to secure the co-operation of other capitalists to purchase the large stock interest of Mr. T. C. Weeks in the Eastern, with a view to make a fight for the continued independent existence of that company. Mr. Weeks is said to hold about 12,000 shares of the stock, and General Lawrence about 10,000 shares. The two blocks together are thus considerably less than half of the total capital of 48,959 shares, but there are other blocks whose owners strongly favor the lease. At the late special meeting of stockholders of the Eastern to ratify the action of the directors, sufficient proxies were secured to give 35,287 shares in favor to 1,060 against the scheme. But it is claimed that no effort was made by the opposition to secure proxies, and that many shares were voted in favor

of leasing whose owners were indifferent or acted on the belief that the matter was a foregone conclusion. It is also asserted that many of those who allowed their stock to be voted for the lease have since become convinced that their interests would best be subserved in another way, and that they would now heartily join in any movement to keep the Eastern in its present condition. It is hence argued that should Mr. Jones and his friends secure Mr. Weeks' stock, a large part of the stock held in small blocks could be secured in favor of a movement to defeat the granting of the required authority by the New Hampshire Legislature, and that such an expression on the part of a considerable part of the stock, together with Mr. Jones' admitted power in the politics of the Granite state, would defeat the measure. All this may be idle talk, but the fact that it is heard would seem to indicate that such a move is possible. But beyond all this, there comes in the question of the attitude of other railroads, which may at this, or some future time, have occasion to come before the legislature with schemes of their own, towards the proposed lease. Self-interest is of course the ruling motive on the part of railroad corporations as well as of individuals, and it is not yet settled in what way or other New Hampshire roads may view their own interests. It has been claimed that they will favor it and endeavor by a union of efforts with the Boston & Maine and the Eastern, to secure a consolidation of the roads on the western side of the state for themselves. So far as their interests lie in the same direction they will naturally pull together, but just so soon as they diverge it will be every road for itself. And in this connection will come in the question of the status of the Boston & Lowell in the proposed consolidation of Northern roads. It may safely be assumed that its interests will not be neglected so long as Col. John H. George is its legal representative, and as he is a mighty power in New Hampshire politics, there is no danger that any scheme will be allowed to pass unchallenged which does not provide for the full recognition of the Boston & Lowell. Were the Northern roads to secure a union hostile to the Boston & Lowell, it would be possible for them to shut it off from its northern connections, while they could secure other connections to Boston. But of course it is not likely that anything of the sort would be attempted or desired. In this connection there is some talk of an attempt to secure a general railroad law in New Hampshire, and this may be the outcome of the whole business. At any rate, there are still six weeks in which to mature schemes before the matter comes before the New Hampshire Legislature, and there is no telling what may be done in that time, or what shape the Eastern-Maine lease may assume before that time. There is good reason to believe that it will meet with strong opposition, and that there will be a hard fight in the Legislature before it is settled."

Brunswick & Albany.—A report comes from Atlanta that this road has been leased by the Savannah, Florida & Western and the Central, of Georgia, jointly, and that they will take possession May 1. The road will be operated by a manager for joint account, in much the same way as the Western Railroad, of Alabama, was formerly worked.

The road extends from Brunswick, Ga., to Albany, 171 miles, and has always been considered a poor property, although its business has been improving slightly. A controlling interest was sold some time ago to Mr. Fred. Wolfe, for the so called Erlanger syndicate, but the required payments were not made, it is said, and the sale fell through. The present lease, if the report is correct, has undoubtedly been made to prevent any one else from getting control of the road.

Buffalo, New York & Philadelphia.—Parties interested in this road have bought the Fairmount property, consisting of some 4,900 acres of land in Clarion County, Pa., in which are extensive veins of coal, iron ore and fire-clay. Several collieries have already been opened on the property, and the new owners intend to work it extensively, shipping the products over this road.

Burlington, Cedar Rapids & Northern.—A bill has been filed by Charles E. Simmons, of Chicago, on behalf of holders of certain income and improvement bonds of the old Burlington, Cedar Rapids & Minnesota Co., in the United States Circuit Court, in Des Moines, Ia., asking for an accounting of the earnings and profits of said road as operated by the present company since the foreclosure sale; also that a decree be made, permitting him to redeem the road, by payment of the amount due under the foreclosed mortgages.

Carson & Colorado.—Trains on this road have begun to run to Bishop Creek, Cal., 40 miles southward from the late terminus at Benton, and 233 miles from the junction with the Virginia & Truckee road at Mound House, Nev. Tracklaying southward is progressing actively, and at latest dates the rails were laid for nine miles southward from Bishop Creek.

Central, of New Jersey.—A meeting of the board was held April 24, at which, it is said, it was decided to use the unencumbered assets of the company for the purpose of raising money to pay off the floating debt and take the road out of the hands of the Receiver. The plan proposed has not been made public, but it is understood that the intention is to make an issue of the collateral trust bonds, to be secured by the pledge of all stocks, bonds and other unencumbered assets of the company. The amount of the floating debt cannot be given, owing the absence of any proper statement either from the company or the receiver for several years past.

Reports continue to be circulated that, as soon as the receivership can be terminated, the road will be leased to the Philadelphia & Reading Co. It is generally believed that a majority of the stock is still owned by the Garrett-Gowen combination, but in that case the question of a lease would seem to depend chiefly on Mr. Garrett's consent. Outside stockholders would hardly be willing to agree to a lease without some guarantees, which the Reading is certainly in no position to give.

Central, of Georgia.—This company's statement for March is as follows:

Earnings.....	\$276,000
Expenses.....	211,641
Net earnings.....	\$64,359

As compared with March of last year there is an increase of \$17,834, or 6.9 per cent., in earnings; a decrease of \$12,654, or 5.6 per cent., in expenses, and an increase of \$30,488, or 89.9 per cent., in net earnings.

Chautauqua Steamboat Co.—The following circular from President Oliver Watson is dated Buffalo, N. Y., March 24:

"This company having purchased the steamers 'Mayville,' 'Jamestown,' 'J. A. Burch,' 'W. B. Shattuc' and 'M. A. Griffith,' formerly owned by the Chautauqua Lake Transit Co., will hereafter operate the same under the name of the Chautauqua Steamboat Co."

Chicago & Alton.—This company asks the assent of its stockholders to the purchase of the St. Louis, Jacksonville & Chicago road, which has been leased by it since 1869.

The purchase is to be made by the issue of Chicago & Alton common stock, share for share, for the stock of the leased road. The bonded debt is already assumed and guaranteed by the lessee.

The leased road extends from Bloomington, Ill., to Godfrey, 150 miles, and has a bonded debt of \$2,365,000 first-mortgage and \$296,000 second-mortgage bonds; the second-mortgage bonds are convertible into common stock, and, under the agreement of purchase, will be exchanged for Chicago & Alton stock. The common stock of the leased line is \$1,448,600 and the preferred stock \$1,054,100, so that the exchange of the stock and second-mortgage bonds will require an issue of \$2,708,700 new Chicago & Alton stock. The rental of the road under the lease is based upon its gross earnings; last year it was \$424,000, or nearly \$42,000 more than the amount required to pay interest on the bonds and 8 per cent. dividends on the stock.

Chicago, Milwaukee & St. Paul.—This company has bought a tract of 30 acres of land at Wabasha, Minn., and will build there a large round-house and a repair shop. The narrow-gauge line from Wabasha to Zumbrota is to be changed from 3 ft. to standard gauge this season.

Chicago & Northwestern.—This company is having surveys made for an extension of the Galena Branch from a point near Galena, Ill., to Freeport.

Cincinnati & Eastern.—At a meeting held April 23 the stockholders of this company voted that the eastern terminus of the extension of the road from Portsmouth, O., eastward should be at Gallipolis.

Cloverport.—Surveys have been made for this road from Cloverport, Ky., northward to the Ohio River. The road will be about 10 miles long, and will serve as an outlet for the coal fields about Cloverport.

Consolidated Railway Co. of Vermont.—The limit set in the decree of strict foreclosure of the Vermont Central road having expired, and the road having passed to the bondholders accordingly, this company has been organized, and will shortly take possession of the Vermont Central and the Vermont & Canada roads, and will issue its securities as provided for in the agreement of reorganization.

The new company gives notice that holders of more than a majority of all the bonds of the Vermont Central have joined in the new organization, and that any bondholders who have not yet joined will be permitted to do so at any time within 30 days from May 11 next.

Detroit, Lansing & Northern.—A contract for building a branch from Rodney, Mich., on the Big Rapids Branch, to Chippewa Lake, has been let to McDermid & Hendrie, of Detroit. The branch will be 6 miles long, and is to be finished by July. It will reach a large body of pine.

Duluth & Iron Range.—It is said that arrangements have been made to begin work on this road at once, and that 30 miles of the grading will be put under contract next month. The line of the road will be from Duluth, Minn., northwest along the north shore of Lake Superior to Agate Bay, and thence northward to Vermillion Lake, about 80 miles in all. The company will at once begin work on the iron mines at Vermillion Lake, which are said to produce a very fine quality of ore.

East Tennessee, Virginia & Georgia.—Reports have been current for some time of an alliance between this company and the Gould Southwestern lines operated by the Missouri Pacific Co. A call has been issued for a special meeting of the stockholders on June 23, to take action on such matters as may be submitted by the board. Among these matters, it is understood, there will be included traffic agreements with the Missouri Pacific and its allied lines, including the Texas & Pacific, but the exact nature of these agreements has not been made public.

A good deal of stock has changed hands recently, and it is reported that some large blocks have been bought in the Gould interest.

Eufaula & Clayton.—The old Vicksburg & Brunswick road was sold in 1879 and was then bought by the Central Railroad Co., of Georgia. A new company has just been organized under the Alabama law, under the name of the Eufaula & Clayton Co., all the stock being owned by the Central Railroad Co., which will continue to operate the road. It extends from Eufaula, Ala., to Clayton, 21 miles.

Florida Ship Canal.—The Florida Legislature has granted a charter to the Florida Ship Canal Co., composed among others of the following named persons: Townsend Cox, William Fullerton, John H. Fay, L. M. Lawson, S. T. Meyer, Michael Jacobs and David McAdam, of New York; John C. Brown, of Tennessee; William Mahone, William B. Cameron, A. W. Jones and V. D. Griver, of Virginia; Benjamin F. Butler, of Massachusetts; John P. Jones, of Nevada, and W. M. Manning, of Ohio. The incorporators are authorized to commence their canal at a point on the Atlantic coast on or between the bay of Fernandina and that of St. Augustine, both points affording safe harbors, and thence to cross the peninsula to the Gulf of Mexico, terminating at any point that they may select between Tampa Bay and Apalachicola, and are invested with all the usual rights necessary to the accomplishment of their enterprise. To facilitate the work the state of Florida has granted the company in perpetuity the right of way not only for the construction of the canal, but also with one-half a mile in width for the main line. It is also invested with many valuable subsidiary rights, such as the construction of transit canals and telegraph lines from any lake or river intersecting the main route in order to furnish the needful supply of water from available tributaries, provided only that by such improvement it shall not lower any navigable lake or river so as to prevent its navigation by steam or sail vessels. It also makes a liberal grant of land to such subsidiary canals. It is conjectured, however, that the St. Johns River will be made available by an entrance at Nassau Inlet, in the vicinity of Fernandina, up to Jacksonville and 14 miles higher, by Doctor's Lake. From this latter sheet of water it is proposed to cut a canal to Suwanee River, which will afford egress to the Gulf. Engineers report that this route can be constructed without locks.

Freehold & New York.—It is proposed to extend this road from its present terminus at Freehold, N. J., southeast to Lakewood, about 14 miles.

Gainesville & Dahlgonega.—The grading on this road is now completed from Gainesville, Ga., on the Atlanta & Charlotte Air Line, to the crossing of the Chestatee River, about 15 miles. Tracklaying was begun a short time ago, and the rails are laid for 5 miles northwest from Gainesville. The whole length of the line from Gainesville to Dahlgonega will be 26 miles.

Gainesville, Jefferson & Southern.—This road is now in operation from Gainesville, Ga., southward to Houston, 17 miles, and work is in progress on its extension to Monroe, about 23 miles, the grading being completed to Jug Tavern, 10 miles. The Jefferson Branch has been for

some time in operation from Florence Junction, 10 miles south of Gainesville, east by south to South Oconee, and has lately been extended to Jefferson, 12 miles from Florence. Negotiations are pending for the building of a branch from Jug Tavern to Athens, or for the extension of the Jefferson Branch to that place.

Georgia Pacific.—This company, it is said, has bought for \$400,000 the property of the Milner Mining Co., consisting of coal lands and mine at Coalburg, Ala., and a railroad 11 miles long from Coalburg to Birmingham. Later dispatches say that the sale is not finally concluded, although negotiations are in progress.

Grand Trunk.—A cable dispatch from London, April 24, says: "The directors of this company have issued circulars to the proprietors of the road describing the scheme which they have matured for the separation of the contingent rights from the guaranteed rights of the Great Western ordinary shares. They suggested the formation of a trust consisting of the President and two directors of the Grand Trunk. The Great Western shares will be transferred to the trustees, who shall issue in exchange certificates representing the rights of shareholders to 3 per cent. guaranteed; also certificates representing their further rights under the deed of union. The proprietors are asked to express an opinion upon the scheme."

Grand Trunk and the Canadian Pacific.—A dispatch from London, April 19, to the *Toronto Globe* says: "Public suspense on the matter of the projected agreement between the Grand Trunk and the Canadian Pacific railways had been somewhat allayed by the publication of the full text along with President Stephen's letter, stating his inability to carry out the tentative agreement. The letter fully confirms the statement in the cable dispatch of yesterday, and justifies the surmise that fatal objection was raised in America, and that the difficulty lay in the proposed surrender of the control of the Ontario & Quebec Railway by the Canadian Pacific Railway to the Grand Trunk. Mr. Stephen assures Sir Henry Tyler that his endeavors will be constant to maintain the most friendly relations with the Grand Trunk Railway Co. in every way consistent with the interests of the Canadian Pacific."

Hannibal & St. Joseph.—The sale of the stock of this company to the Chicago, Burlington & Quincy has not been finally concluded as yet. There has been, it is said, some disagreement as to the bonds in which payment for the stock is to be made, or at least as to the manner in which they are to be secured. It was even reported at one time that the negotiations were broken off altogether. The present condition of affairs seems to be that holders of about 70,000 shares of common and 20,000 shares of preferred stock have accepted the terms offered, 45 for the common and par for the preferred, payable in Chicago, Burlington & Quincy 5 per cent. bonds, but that there has been some discussion as to the terms of the bonds, and this has been taken advantage of by certain parties, who, for their own speculative purposes, would be willing to have the sale defeated. There does not, however, seem to be, at the present writing, reason to believe that it will not be carried out.

Illinois Midland.—The report of the Special Master has been filed with the United States Circuit Court at Springfield, Ill. The report finds that the floating debt is, in round numbers, \$600,000, and that there are \$700,000 receiver's certificates outstanding. The Master finds that about \$100,000 of the floating debt and \$300,000 of the certificates are invalid and not legal liens upon the road. The report has still to be confirmed by the Court.

Indiana, Illinois & Iowa.—The offices of this company have been removed to Kankakee, Ill. They have heretofore been in Chicago.

Louisville & Nashville.—This company's statement for March and the nine months of the fiscal year from July 1 to March 31, is as follows:

	March.	Nine months.
Earnings.....	\$1,135,000	\$10,129,074
Expenses.....	690,045	6,285,703
Net earnings.....	\$444,955	\$3,843,371

For March there was an increase of \$66,167, or 6.2 per cent., in earnings; an increase of \$130,672, or 23.4 per cent., in expenses; and a decrease of \$64,595, or 12.6 per cent., in net earnings. For the nine months there was an increase of \$1,268,554, or 14.3 per cent., in earnings; an increase of \$890,418, or 16.5 per cent., in expenses; and an increase of \$378,136, or 10.9 per cent., in net earnings.

Louisville, New Albany & Chicago.—The new line between Indianapolis and Chicago, on which local trains are already running, will be opened for through traffic early in May.

The question of the location of the repair shops, which has been so long under discussion, has finally been settled. The company agrees to build the shops in La Fayette, Ind., that town giving 22 acres of land and \$25,000 in money to secure them.

Massachusetts Central.—The *Boston Advertiser* says: "Up to the present time \$2,928,000 of the Massachusetts Central bonds have been deposited, and it is expected that a full \$3,000,000 will be secured. There is no prospect that they can all be got in, as the owners of them are unknown, they being coupon bonds, not recorded or registered, and as negotiable as bank-notes. Doubtless some of the holders have moved out of the state, and are ignorant of the situation. Wherever the owners have been found they have readily consented to put in their bonds to aid the reorganization plan. Every effort has been made by President Aldrich and Treasurer Seymour to get the bonds in and save a foreclosure, but it is now nearly certain that the latter course will have to be taken and a new company formed, in which the rights of the present bond and stockholders will be secured. President Aldrich's circular asking the bondholders to sign a formal request to the trustees to take possession of the road has been well responded to, the holders of \$2,011,000 of the bonds, or \$261,000 more than the required majority, affixing their signatures either in person or by agent. This request was early in the week presented to the trustees, and as a result thereof they have taken formal possession of the line. The next move will be to fix a date for the mortgage sale. As it is necessary to advertise this for three months, it will not be held until about the first of August. As soon as this is accomplished, the details of the reorganization will be completed and work on the road resumed."

Milwaukee & Northern.—The line for the extension of this road through Green Bay, Wis., has been finally located, and commissioners have been appointed to condemn the land needed.

Morgan's Louisiana & Texas.—Grading is nearly finished, and track laying has been begun on a branch from New Iberia, La., to the Avery Salt Mine. It is 9 miles in length.

The transfer of the stock of the company to the Southern

Pacific Co., or rather to the Western Development Co., representing the Southern Pacific, has been formally completed. The particulars of the sale were fully noted a few weeks ago.

Mount Pleasant, Santee & Little River.—This company has been organized to build a railroad from Mount Pleasant, S. C., on Charleston Harbor, northward to the North Carolina line, about 150 miles. The company claims to have a subscription from certain parties in Boston, which is sufficient to build the line.

Nashville, Chattanooga & St. Louis.—Some time ago a suit was begun by the United States to recover \$153,000 back coupons on certain bonds of this company held by the Treasury as part of a fund for the benefit of certain Indian tribes. In the United States Circuit Court in Nashville, April 24, Judge Baxter decided that the claim of the government was barred by the statute of limitations, and judgment was accordingly given for the company.

New York Central & Hudson River.—A petition having been sent from Buffalo, asking this company to run trains at intervals of an hour or less on what is known as the Belt line around the city, General Superintendent Toucey has returned the following answer:

"This company would be very glad to establish a round-trip service, but there are two existing causes which will prevent our making a success of such service. The first is our inability, on account of legal difficulties, to obtain remunerative rates for short distances—that is a mile or under. If the restriction of the general railroad act, under which the Belt line was constructed, limiting us to 3 cents per mile could be removed so far as the line is concerned, and we could be permitted to charge remunerative rates for a mile and under, in case it becomes necessary to establish stations at so short a distance apart, then the first difficulty would be removed.

"The second difficulty is an ordinance of the Common Council of the city of Buffalo preventing the running of trains at a higher rate of speed than six miles per hour. Unless this ordinance is changed, our speed would hardly equal that of a city horse car line, and hourly trains would be a failure.

"With these difficulties removed we would put on experimental trains, with the hope of their being remunerative, and becoming a permanent feature hereafter."

New York, Chicago & St. Louis.—A dispatch from Chicago, April 25, says: "The Nickel Plate road to-day completed arrangements for crossing the tracks of the Pittsburgh, Fort Wayne & Chicago road at Grand Crossing. It will enter this city over the tracks of the Lake Shore road, and use the latter's terminal facilities until its own are ready. The crossing will be made on Sunday next, and the arrangements will be completed and in working order by May 10."

It is stated that this company will execute a second mortgage, under which \$10,000,000 bonds will be issued. Of these \$4,000,000 will be issued at once, the remainder being kept for use as needed to pay for improvements of the road and equipment.

New York, Lake Erie & Western.—This company makes the following statement for February and the five months of the fiscal year from Oct. 1 to Feb. 28:

	February.	Five months.
Earnings.....	\$1,383,616	\$8,137,722
Expenses.....	1,049,816	5,757,072
Net earnings.....	\$233,800	\$2,380,650

For February there was a decrease of \$21,141, or 1.6 per cent., in earnings; an increase of \$36,759, or 3.6 per cent., in expenses; and a decrease of \$57,900, or 19.8 per cent., in net earnings. For the five months there was an increase of \$412,424, or 5.3 per cent., in earnings; an increase of \$152,900, or 2.7 per cent., in expenses; and an increase of \$259,524, or 12.2 per cent., in net earnings.

Officers and clerks of this company are now engaged in making a careful inventory of the property of the New York, Pennsylvania & Ohio road, preparatory to the formal transfer of the road under the lease.

It is said that this company will put on a fast train between New York and Cincinnati next month, and also, probably, one between New York and Chicago, by way of the Chicago & Atlantic road. Special trains will be prepared for these runs.

In the United States Circuit Court in New York, April 24, in the old suit of this company against James McHenry, the Court directed a verdict for the company, and the jury accordingly found a verdict for \$1,496,814, being the amount claimed, with interest. Counsel for McHenry moved for a suspension of judgment and a new trial.

The contractors for this company's Erie & Wyoming Valley line, Smith & Ripley, of New York, have been inspecting the line of the new road as located, and will shortly be ready to let sub-contracts on the grading. The new line is to run from Hawley, Pa., to Pittston, 47 miles, and there will be much heavy work on it.

New York & New England.—Contracts for the second track from Franklin, Mass., to the Air Line junction, near Willimantic, Conn., have been awarded, and also from Vernon to Hartford. The contractors will begin work at several points this week, and the double tracking can be pushed quite rapidly, as the road-bed is nearly completed in many places and there are miles of sidings which will be incorporated in the second track as they are successively reached. It will be noticed that no contract has been made for double tracking between Vernon and the Air Line junction. This is for the reason that there is a probability of changes of route between those points to the southward, to avoid the grades of Bolton Mountain. When the double tracking is finished from Boston to Hartford the road will have 105 miles of double track.

The company has contracted for 12,000 tons of steel rails, and 10,000 tons will be wanted this season. The road has also contracted for 15 new locomotives, 20 passenger cars, 5 express cars, 100 freight cars, 500 coal cars, and 20 cabooses.

A dispatch from Washington, April 21, says: "Messrs. Robert R. Bishop and John C. Gray, of Boston, have begun arguments before the Supreme Court in the case of George M. Barnard et al., assignees of the Boston, Hartford & Erie Railroad, against Samuel Clark, General Treasurer of the state of Rhode Island. The facts of the case are interesting and somewhat peculiar. In 1889 the road made application to the Rhode Island Legislature for authority to extend its line from Providence to the state line in the direction of Attleboro, with a view to connection with Boston. The Legislature granted this right on condition that the company should give a bond in the penal sum of \$100,000, with sureties to the state, to build the road in three years. The company gave the bond, and by consent of all parties a certificate of indebtedness for \$100,000, issued by the city of Boston, was purchased by the company and delivered to the State Treasurer in lieu of securities upon the bond. Nothing was ever done toward building this extension, as the road soon afterward went into bankruptcy. The complainants in the present bill were chosen assignees, and brought a bill to recover the money, making the city of Boston and the State Treasurer, Samuel Clark, defendants.

Under a decree of Judge Shipley, in the Circuit Court for Massachusetts, the city of Boston paid the money due on this certificate into the registry of the Court, to await a final decision as to its ownership. Judge Lowell afterward decided the case favorably to plaintiffs, and an appeal was taken. On the part of the complainants it is contended that the building of the proposed extension was *ultra vires*, or beyond the power of the company, because it was chartered in Connecticut, with no authority to build east of Providence, and the consent of the Connecticut Legislature had not been obtained, and therefore this use of its funds was unauthorized. They further contend that, even if authorized, the state of Rhode Island is only entitled to recover out of the \$100,000 whatever damage the state has suffered by reason of the failure to build the road, the penal sum in bond merely standing as security for actual damage. For the defence, it is claimed that the proceeding is really one against the state of Rhode Island, and, therefore, that under the 11th amendment to the constitution, forbidding proceedings against a state, it cannot be maintained. The defendant also contends that the sum mentioned in the bond is to be considered as liquidated damages, and not as a penalty, and, therefore, the state is entitled to the entire amount.

New York, West Shore & Buffalo.—A circular issued by this company says:

"The double track between New York city, Albany and Syracuse will be opened for passenger and freight traffic early in the summer.

"Construction is being pushed with unparalleled rapidity, considering the substantial character of the work, and it is hoped that the entire line may be opened for business in the fall.

"The eastern terminal station is at Weehawken, on the North River, opposite New York city. Ferry houses will be provided at the foot of Forty-second street, and at convenient points down town."

"Several large and swift boats, with iron hulls, have been built expressly for service between the large terminal station at Weehawken and the city landings. These boats will equal, and in some respects surpass, the finest boats on the river engaged in like service."

"Favorable traffic contracts have already been executed with several important connections, notably the Delaware & Hudson Canal Co., with which the New York, West Shore & Buffalo Railway Co. will enjoy union depot facilities at Albany and South Schenectady. Arrangements are also perfected for a connection in Jersey City with the Pennsylvania Railroad and other lines, in order to establish through car service via West Shore Route between Washington, Baltimore, Philadelphia and Saratoga or Montreal."

The plans have been prepared for the repair shops at Frankfort, N. Y., near Utica, and work has been begun laying out and leveling the ground. These shops will be extensive, and the plans are described by the *Utica Herald* as follows: "There is to be constructed a turn-table 100 ft. in diameter, and around this, at convenient distances, and so located as to be accessible from the turn-table, will be the following buildings: Machine and erecting shops, 322 by 116 ft.; a foundry T-shaped, the bar part being 400 ft. long, and the other part 293 ft., the width of each part being about 70 ft. Near this, but detached, will be a large pattern store-house. Further to the right will be the boiler shop 366 by 64 ft., with a cross section 126 by 64 ft. The blacksmith shop is designed to be 500 by 74 ft., but for the present a building 200 by 74 ft. will be put up. There will also be a planing mill and wood-work shop 306 by 74 ft., with an L 15 by 90 ft. There will be a smaller boiler house 40 by 30 ft. On the side nearest the track, opposite the turn table, will be a storehouse for lumber 100 by 50 ft. There will be another storehouse 115 by 40 ft., and a paint shop 115 by 130 ft. The office and drafting building will be 50 by 200 ft. The plan also provides for a full circle round house, but only half of this is to be built at the outset. Northeast of this there will be large coal sheds into which engines can run and receive their load."

Northern Central.—This company's statement for March and the three months ending March 31 is as follows:

	March.	Three months.
Earnings.....	\$506,864	\$1,492,982
Expenses.....	302,356	1,000,542
Net earnings.....	\$204,508	\$492,440

For the three months there was an increase of \$257,375, or 20.8 per cent., in gross earnings; an increase of \$96,715, or 10.7 per cent., in expenses, and an increase of \$160,560, or 48.4 per cent., in net earnings.

Northern Pacific.—Track on the main line is now laid to the main crossing of the Gallatin River, 21 miles west of Bozeman, Mon., and 1,071 miles from St. Paul. Regular trains now run through to Bozeman. The bridge over the Gallatin is being erected and material prepared for the bridge over the Missouri. Grading is actively in progress on the Yellowstone Park Branch, and most of the ties for that branch have been delivered.

Oregon Improvement Co.—This company's statement shows earnings for February and the three months of the fiscal year from Dec. 1 to Feb. 28 as follows:

	February.	Three months.
Earnings.....	\$233,140	\$744,892
Expenses.....	184,606	582,974
Net earnings.....	\$48,474	\$161,918

There was a loss in net earnings for February, due chiefly to an interruption in shipments from the coal mines near Seatle, Wash. Terr., by wash-outs on the road.

Pennsylvania.—Contracts on the new Germantown & Chestnut Hill line have been let to E. D. Smith, E. J. Gaynor, Condon Brothers, Costigan & Thayer, McLaughlin & Riley and Smith & McGraw.

The company's statement for March shows for the month, as compared with March, 1882, on all lines east of Pittsburgh and Erie:

An increase in gross earnings of (7.1 per cent.).....	\$277,067
An increase in expenses of (9.5 per cent.).....	237,462
Net increase (2.8 per cent.).....	\$39,625

For the three months ending March 31, as compared with the corresponding period last year, the same lines show:

An increase in gross earnings of (11.7 per cent.).....	\$1,238,589
An increase in expenses of (7.8 per cent.).....	545,098
Net increase (19.4 per cent.).....	\$693,487

All lines west of Pittsburgh and Erie for the three months of 1883 show a surplus over all liabilities of \$236,156, being a gain of \$248,442, as compared with the corresponding period of last year.

Pennsylvania, Slatington & New England.—Chief Engineer A. B. Paine makes the following statement of the work on this road on April 2: "The line in the state of Pennsylvania, between the Lehigh River and the Delaware

River, a distance of 31½ miles is all graded, with the exception of about 2 miles. Of this distance 11 miles from Pen-Argyl, the centre of the state belt, to Portland, is laid with steel rails, and switches, full tied, spiked and ballasted. At Pen-Argyl, a depot and freight-house are erected, and also a telegraph line between these two points. On this section the company has a new locomotive and 20 construction cars.

"The bridge under contract across the Delaware River, consisting of four spans, total length 575 ft., is nearly finished, and all the material on the ground for its completion, which will require only about 40 working days.

"In New Jersey, the line running through the heart of a very rich agricultural valley, the expense of right-of-way has been very heavy.

"On this section a connection has been made at Deckertown by switch with the New York, Susquehanna & Western Railroad, and the track laid with steel rails south of this point for a distance of 5 miles, ballasted, water-tank erected and several thousand ties delivered on the line. There still remains in New Jersey about three miles of grading to be done, and the whole line can be completed to Pine Island in 60 to 90 days.

"The designs for the two bridges, one across the Papakating, near Augusta, and the other across the Walkill, near Deckertown, are completed, and most of the material ready."

Philadelphia & Reading.—This company's statement for March and the four months of the fiscal year from Dec. 1 to March 31 is as follows:

	March.	Four months.
Railroad Co.:	Gross.	Net.
Railroad traffic.....	\$1,607,894	\$685,955
Canal traffic.....	6,943	24,328
Steam colliers.....	47,754	20,232
Richmond barges.....	6,649	1,116
Total R. R. Co.	\$1,669,240	\$690,743
Coal & Iron Co.	1,160,484	11,758
Total	\$2,829,724	\$702,501

*Loss. The expenses do not include interest or rental charges, the net earnings being the amounts from which those charges are to be paid.

A comparison of gross and net earnings for the four months is as follows:

	1882-83.	1881-82.
Railroad Co.	Gross. \$6,527,249	Gross. \$6,254,474
Coal & Iron Co.	Net. \$2,830,791	Net. \$2,471,145
Total	\$9,358,040	\$8,725,619

The gross earnings this year show for the Railroad Co. an increase of \$272,775, or 4.4 per cent.; for the Coal & Iron Co. a decrease of \$80,543, or 1.9 per cent., and for both companies an increase of \$192,232, or 1.8 per cent. The net earnings show for the Railroad Co. an increase of \$359,646, or 14.5 per cent.; for the Coal & Iron Co. a decrease of \$196,963, or 95.0 per cent., and for both companies a gain of \$162,683, or 6.1 per cent. The gain on the railroad is fair, but not what had been expected, while the loss of the Coal & Iron Co. takes the place of gain in the company's estimates.

The traffic reported is as follows:

	1883.	1882.	1883.	1882.
Passengers carried.....	970,332	886,185	3,658,240	3,446,256
Tons merchandise.....	589,828	661,145	2,100,157	2,439,694
Tons coal.....	600,993	607,091	2,533,087	2,329,556
Tons coal on colliers.....	43,658	52,071	162,948	185,621
Tons coal mined:				
By Coal & Iron Co.	301,737	270,239	1,176,931	1,097,221
By tenants.....	117,152	111,901	447,980	419,154
Total	418,889	382,140	1,624,911	1,516,375

There was a decrease in general merchandise tonnage both for the month and the year, but an increase in passengers and coal. The loss in net earnings of the Coal & Iron Co. was in the face of a considerable increase in coal mined from its lands.

The final report of the Special Master, closing up the business of the receivership, is as follows:

"That I have upon this day, in pursuance of the statement made in my 48th report, of my purpose to do so, examined the vouchers that were outstanding at the date of my 47th report (33d audit) and which have come in since. As reported upon the 33d audit the items remaining unvouched upon March 20, 1883, amounted in the aggregate to the sum of \$17,534.89.

"Of these, there related to the business of the Philadelphia & Reading Railroad Co. \$16,177.44, and to the business of the Coal & Iron Co. \$1,357.35. Total, \$17,534.89.

"Of those relating to the business of the Reading Railroad Co. there have been this day vouched, in the usual manner, items amounting to \$16,098.12, and the accounting officer of the Reading Railroad Co. has, under oath, testified to my satisfaction with respect to the six items constituting the small amount not otherwise vouched, viz., \$79.32; total, \$16,177.44.

"Of the two items relating to the business of the Coal & Iron Co., there has been this day vouched in the usual manner, one of these items (\$1,232.25), and the accounting officer of the Coal & Iron Co., under oath, testified to my satisfaction with respect to the single item not otherwise vouched, viz., \$125; total, \$1,357.35.

"I accordingly report that the assets of the receivers have now been duly and fully vouched to the time of and including the payment over the balance in their hands to the proper officers of the respective companies.

Pittsburgh, Cincinnati & St. Louis.—Considerable local excitement has been caused by the discharge of a large number of passenger conductors on the various divisions of the road. No charges are made publicly against any of these conductors, and no reasons given; they are simply discharged from the company's service. Their places have generally been filled by the promotion of freight conductors.

Raleigh & Albemarle.—The people of Wake County, N. C., have voted by a large majority against the proposed county subscription of \$100,000 in aid of this road.

Rogersville & Manchester.—This company has been organized to build a railroad from Rogersville, Tenn., by way of Cumberland Gap, to Manchester, Tenn., about 75 miles.

Securities on the New York Stock Exchange.—The Governing Committee of the New York Stock Exchange has placed the following securities on the lists:

New York, Texas & Mexican. \$2,130,000 first-mortgage 6 per cent. 30-year bonds. The amount authorized is \$2,850 per mile of road.

St. Louis, Iron Mountain & Southern. \$1,345,000 additional general consolidated mortgage 5 per cent. bonds, issued on new branch lines completed.

Sinnemahoning & Sheffield.—This company has been organized to build a railroad from Sheffield, in Warren County, Pa., to a point on Bennett's Branch, on the line

between Cameron and Elk counties. The distance is 65 miles.

Union Pacific.—This company's statement for February and the two months ending Feb. 28 is as follows:

	February.	Two mos.
Earnings.....	\$1,743,207	\$3,729,742
Expenses.....	1,068,738	2,153,651
Net earnings.....	\$674,469	\$1,576,091

For the two months there was a decrease of \$291,898, or 7.3 per cent., in gross earnings; a decrease of \$574,611, or 21.1 per cent., in expenses, and an increase of \$282,713, or 21.9 per cent., in net earnings.

The following is the full text of a letter respecting the financial differences now existing between the United States and the Union Pacific, which was, on April 21, addressed by the Secretary of the Interior to the President of that company:

"SIR: The Commissioner of Railroads in a communication to me dated the 18th inst., submits statements, copies of which are herewith inclosed, showing the cash requirement from your company for the year ended Dec. 31, 1882, under the act of May 7, 1878, to be \$825,905.51.

"Added to the next cash requirement claimed from your company to Dec. 31, 1881, the amount now claimed to be due to the United States, after deducting transportation services performed, to Dec. 31, 1882, is \$1,727,742.54.

"In addition to the demands for payment of various sums already made for periods prior to Jan. 1, 1882, I demand payment on behalf of the United States from the Union Pacific Railway Co. of the sum of \$825,905.51, which is the cash requirements from the company for the year ending Dec. 31, 1882.

"Attention is called to the statement of the Commissioner as follows: The total balance claimed by the government under the act of May 7, 1878, is \$1,727,742.54. If the whole amount claimed by the company on account of the contested items for new construction and new equipment be deducted there would still remain an uncontested balance of \$1,036,824.88, as appears from the following statement, and no part of which has been paid or tendered, except the \$693,588.83, on July 26, 1881.

Total cash balance claimed by the government to Dec. 31, 1881..... \$901,837.03

For the year ending Dec. 31, 1882..... 825,905.51

Total..... \$1,727,742.54

Deducting 25 per cent. of amount claimed by the company for new construction and new equipment to Dec. 31, 1881, \$595,359.96, and 25 per cent. of same for 1882, \$85,537.70..... \$690,917.66

Balance due the government..... \$1,036,824.88

"If the company has any defense to this part of the cash payment required this office has not been informed of it.

"I desire also to call your attention to the sixth section of the act of May 7, 1878, which provides that no dividend shall be voted, made or paid for or to any stockholder or stockholders in either of said companies respectively at any time when the said company shall be in default in respect of the payment either of the sums required as aforesaid to be paid into said sinking fund or in respect of the payment of the 5 per cent. of the net earnings, etc. If your company should decline to accede to my demand for payment of the whole amount due to the United States, I suggest that at least payment of so much of the balance due as the company does not contest—viz., \$1,036,824.88, be made without further delay and without prejudice to questions in controversy which are proper for judicial determination.

"If the company should pay into the Treasury of the United States the uncontested balance, as above, I desire it distinctly understood that the demand for payment of the whole amount as hereinbefore stated is not waived. Of course you must well know that I have not the authority to demand or accept a less amount than is due to the United States under the law."

Utica, Clinton & Binghamton.—The Delaware & Hudson Canal Co. has begun to work this road under the lease. For several years past the Delaware, Lackawanna & Western has operated it under contract.

Wabash, St. Louis & Pacific.—A circular issued April 20 by Jay Gould, as President of this company, contains the following statements in relation to the new collateral trust loan and other matters:

"In order to pay off the floating debt of this company and to provide for its car trust payments, the directors, authorized by the shareholders, have decided to create a collateral trust loan, amounting to \$10,000,000 in coupon bonds, bearing 6 per cent. interest and running 30 years.

"Of these bonds \$4,000,000 will be reserved to meet the car trust obligations which mature, in monthly installments, during the ensuing nine years, and such portion of the bonds remaining as may be necessary to pay off the floating debt will be sold.

"The collateral trust bonds will be guaranteed, principal and interest, by the St. Louis, Iron Mountain & Southern Railway Co., and secured by deposit in the Mercantile Trust Co. of mortgage bonds, real estate, stocks, and assignment of the interest of this company in the rolling-stock to come into its possession, upon payment of the obligations of the Car Trust Co. The total value of these securities is estimated at about \$18,000,000, and power is given to the company in the indenture to sell any part thereof whenever it may be deemed advisable, the proceeds to be applied to the redemption of the collateral trust bonds.

"The bonds are therefore amply secured, first, by the deposit of securities, valued at nearly double the amount of the entire collateral trust loan; and, second, by the guarantee of the St. Louis, Iron Mountain & Southern Railway Co. They will be first offered for sale to the stockholders as soon as the bonds are ready for delivery at par. The sole object of this loan is to relieve the Wabash Co. of its floating debt, and to provide for obligations which would otherwise be an incumbrance upon the net earnings of the company.

"These measures, together with the lease of the property to the St. Louis, Iron Mountain & Southern Railway Co., have been undertaken strictly for the benefit and advantage of the stockholders, and their success, which is now assured, should be considered of great value to the company.

"In all essential points the situation of the Wabash, St. Louis & Pacific Railway Co., financially and otherwise, will be strengthened and improved by the plans announced, while its future payments will be provided for and its fixed charges will be substantially confined to its present liabilities.

"This brief statement, together with the fact that a very large amount of the stock is held by the directors of the company, I myself being the largest stockholder, should be a sufficient answer to the malicious and unfounded reports recently circulated."

Western Union Telegraph.—At the meeting held April 21 the stockholders voted to approve the lease of the Mutual Union Telegraph lines, also to approve several other leases and agreements already in effect, but which had never been approved by a formal vote of the stockholders.